State of Wisconsin

Standards & Procedures of

Practical Skills Manual

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State of Wisconsin – Standards & Procedures of Practical Skills

This manual is intended to provide students with examples of tried and proven techniques of caring for patients with the various injuries or illnesses the EMT will encounter in the field. It does not provide the only method or technique that may be an acceptable approach in caring for an injury or illness. However, since the various certification examinations used within the state are based on the current edition of this document as well as the current edition of the US DOT National Standard Curriculum, it is clearly to the student's advantage to use these skill procedures as the basis for his/her practice. While this is a consensus document, endorsed by the EMS Training Centers, the Bureau of EMS and Injury Prevention of the Department of Health and Family Services as well as the Physician's Advisory Committee of the Wisconsin Emergency Medical Services Board for purposes of instruction, it is not intended to define a standard of care. The Bureau of Emergency Medical Service & Injury Prevention, Wisconsin's Physician Medical Director, the Physician's Advisory Committee of the Wisconsin EMS Board, as well as regional and local physician medical direction are charged with developing and promulgating those minimum standards of care for the various levels of provider within Wisconsin.

This manual contains descriptions of those skills included in the scope of practice for providers ranging from the First Responder through the Emergency Medical Technician – IV Tech. The scope of practice for each level of provider, as defined by the EMS Section of the Bureau of EMS and Injury Prevention and local protocol, shall define which of these skills may be used at each provider level.

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SECTION 1 – BLOOD PRESSURE MEASUREMENT

OBJECTIVES:
1. To consistently obtain an accurate blood pressure measurement through the use of auscultory and palpatory methods

IMPORTANT POINTS:
1. Correctly size and position the blood pressure cuff
2. Locate the brachial artery pulse in the antecubital space
3. Inflate the cuff to a point 30 mm Hg above the point at which the pulse is lost
4. Deflate cuff at a rate commensurate with the pulse and record the results

SKILL:

I. BLOOD PRESSURE MEASUREMENT

A. PALPATION METHOD
1. Position the patient with the arm at heart level
2. Apply the cuff snugly around the extremity with the lower edge at least one (1) inch above the antecubital space and the bladder centered over the brachial artery
3. Palpate the brachial, radial or ulnar artery pulse
4. Inflate the blood pressure cuff to 30 mm Hg above the point at which the pulse disappears
5. Deflate cuff slowly while noting the reading at which the pulse is felt to return
6. Record systolic blood pressure as #/P

Too large a cuff will give a false low reading. Too small a cuff will give a false high reading

TEACHING POINTS

B. AUSCULTORY METHOD
   1. Position the patient with the arm at heart level
   2. Apply the cuff snugly around the extremity with the lower edge at least one (1) inch above the antecubital space and the bladder centered over the brachial artery
   3. Insert stethoscope earpieces in ears with earpieces pointing slightly forward: test diaphragm for sound conduction by gently tapping on diaphragm
   4. Palpate or auscultate brachial artery while inflating cuff to 30 mm Hg above the loss of pulse
   5. Deflate cuff slowly with stethoscope diaphragm over brachial artery, noting the systolic and diastolic pressures

TEACHING POINTS

SECTION 2 – LIFTING AND MOVING PATIENTS

OBJECTIVES:
1. To provide mechanisms of patient movement and transport, which eliminate or minimize the potential for further patient injury while providing a rate of transport of movement appropriate to existing emergency conditions
2. To provide mechanisms of patient movement and transport, which provide the greatest degree of patient and rescuer safety

EMERGENCY MOVES: When using emergency moves it is assumed the patient must be moved to a position of relative safety immediately and no time is available to begin an assessment or provide spinal immobilization

IMPORTANT POINTS:
1. The greatest danger in moving a patient quickly is the potential of aggravating a spine injury
2. Always pull in the direction of the long axis of the patient's body
3. Do not pull a patient sideways; avoid bending or twisting the patient's torso
4. The patient should be supine whenever possible

SKILL:

I. LIFTING AND MOVING PATIENTS

A. BLANKET DRAG
   1. Place patient on blanket
   2. Drag blanket in direction of long axis of patient's body
      a. Keep head as close to floor as possible
      b. Move patient head first whenever possible

B. CLOTHES DRAG
   1. Grasp patient's clothing pulling from the neck or shoulder area
   2. Drag in direction of the long axis of the patient's body
      a. Keep patient's head as close to the floor as possible
      b. Drag in direction of the long axis of the body

TEACHING POINTS

C. ONE-RESCUER DRAG
   1. Place hands under the patient's armpits from the back
   2. Grasp the patient's forearms and drag in the direction of the long axis of the body

URGENT MOVES: Urgent moves are required when the patient must be moved quickly but adequate time is available to perform an initial assessment and provide spinal immobilization precautions

IMPORTANT POINTS:
1. The greatest danger in moving a patient quickly is the potential of aggravating a spine injury
2. Always pull in the direction of the long axis of the patient's body
3. Do not pull a patient sideways; avoid bending or twisting the patient's torso
4. The patient should be supine whenever possible

D. RAPID EXTRICATION (Patient sitting in vehicle)
   1. First rescuer brings cervical spine into neutral, in-line position and provides manual stabilization
   2. Second rescuer applies cervical immobilization device (rigid cervical collar)
   3. Third rescuer positions the foot-end of a long spineboard at the door opening, then moves to opposite side of patient
   4. Second rescuer supports and stabilizes the patient's torso as the third rescuer frees the patient's legs
   5. At the direction of the rescuer holding manual C-spine stabilization, the patient is rotated in several short, coordinated moves until the patient's back is in the open doorway and his/her legs are on the seat
   6. The end of the long spineboard is placed against the patient's buttocks. Additional rescuers support the opposite end of the board as the first and second rescuers lower the patient to the board
   7. The second and third rescuers slide the patient into the proper position on the board in short coordinated moves while the first rescuer maintains manual C-spine stabilization
   8. First rescuer maintains manual stabilization as the patient is moved to a place of relative safety

Manual C-spine stabilization may need to be transferred between rescuers during body rotation because of vehicle obstacles

TEACHING POINTS

E. HORSE COLLAR EXTRICATION (patient sitting)

OBJECTIVES:
1. To permit emergency extrication of a patient when their condition does not allow the time required to apply full head and torso immobilization with a short extrication device
2. To permit emergency extrication in a hazardous situation (fire, haz/mat, etc)
3. To provide an alternative extrication technique when a short immobilization device is not available
4. To permit emergency patient movement when only one rescuer is available

SKILL:
1. Hold a full size cloth blanket diagonally at opposite corners: Loosely swing like a jump rope to make a bulky, long cravat — Do not fold the blanket
2. Position the blanket for C-spine control and movement — Manual C-spine stabilization may be done if time and personnel allow
   a. Place the middle of the blanket behind the patient's neck
   b. Bring the ends over the shoulders
   c. Cross the blanket in front of the chest
   d. Pass the ends under the armpits — Hold the blanket snuggly against the neck to provide support
   e. Cross the ends behind the patient's back
3. Hold the blanket ends close to the armpits
4. Tilt the patient's upper body to clear the doorframe as needed — Twisting the ends may provide better stabilization and control of the patient
5. Slide the patient off and lower into a sitting position onto the ground or directly on to a long spineboard
6. Lower the patient to a supine position

NON-URGENT MOVES: Non-urgent moves are those moves, which are used when adequate time is available to perform a thorough assessment and provide all appropriate immobilization precautions

F. DIRECT GROUND LIFT (no suspected spinal injury)
   1. Two or three rescuers line up on one side of the patient
   2. Rescuers kneel on one knee (preferably the same knee for all rescuers)
   3. The rescuer at the head places one arm under the patient's neck and shoulders while cradling the patient's head. S/he places the other hand under the patient's lower back

TEACHING POINTS

4. The second rescuer places one arm under the patient's knees and the other arm just above the patient's buttocks
5. If a third rescuer is available, s/he should place both arms under the patient's waist and the other rescuers should slide their arms either up to the mid-back or down to the buttocks as appropriate
6. On signal, the rescuers lift the patient to their knees and roll the patient toward their chests
7. On signal, the rescuers stand and move the patient to the stretcher
8. To lower the patient, the steps are reversed

G. EXTREMITY LIFT (no suspected spinal or extremity injuries – patient supine)
1. Properly position the stretcher beside the patient
2. One rescuer kneels at the patient's head and one kneels at the patient's side by the knees
3. The rescuer at the head places one hand under each of the patient's shoulders while the rescuer at the foot grasps the patients wrists and pulls the patient to a sitting position
4. The rescuer at the head slips his/her hands under the patient's arms and grasps the patient's wrists
5. The rescuer at the patient's feet places his/her hands under the patient's knees
6. Both rescuers move to a crouching position
7. Both rescuers stand simultaneously and move with the patient to the stretcher

H. SUPINE TRANSFER - Direct Carry
1. Position the stretcher perpendicular to the bed with the head end of the stretcher at the foot of the bed or the foot end of the stretcher at the head of the bed
2. Both rescuers stand between bed and stretcher, facing patient
3. First rescuer slides arm under patient's neck and cradles patient's head and shoulders
4. Second rescuer slides hands under patient's hips and lifts slightly
5. First rescuer slides other arm under patient's back
6. Second rescuer places arms under hips and calves
7. Rescuers slide patient to edge of bed
8. On signal, patient is lifted and curled toward rescuer's chests
9. Rescuers rotate and place patient gently on stretcher

TEACHING POINTS

I. SUPINE TRANSFER – Draw Sheet Method
   1. Loosen bottom sheet beneath patient
   2. Position stretcher next to and parallel to bed
   3. Prepare stretcher and adjust to bed height
   4. Rescuers then reach across stretcher and grasp sheet firmly at the patient's head, chest, hips and knees
   5. On signal, slide the patient gently onto stretcher

If a transfer board is used, it should be placed over the seam formed between the stretcher and bed

J. STAND AND PIVOT (seated patient)

OBJECTIVES:
1. To move a seated patient to the cot

IMPORTANT POINTS:
1. The patient must be able to bear some weight
2. One or two rescuers may be used
3. Position the cot close to the patient with its height about the same as a chair seat
1. The cot must be stabilized to avoid movement

SKILL:
1. While facing the patient, grasp the patient by the waistband or under the armpits
2. On the rescuer's count, assist the patient to a standing position
3. Assist the patient in turning (pivoting) so their posterior is toward the cot
4. Once the patient's legs are touching the cot, lower the patient to a seated position
5. Position the patient on the cot

The patient may want to hold onto the rescuer's shoulders. If the patient has footwear that will easily slide on the floor's surface, the rescuer may need to stand toe-to-toe with the patient to prevent slipping

TEACHING POINTS

K. EQUIPMENT MOVES:
   1. Stair Chair
      a. Place patient on stair chair
      b. Secure patient to chair at chest, thighs and legs. Tie hands together as appropriate
      c. Rescuers pick up and carry chair from ends of chair
      d. While moving the patient in the stair chair:
         1) Rescuers move facing forward while on level terrain
         2) When descending stairs, rescuer at the patient's feet faces toward the patient and moves backward
         3) Third person guides rescuers
   2. Stretchers – Follow manufacturer's instruction for proper use

TEACHING POINTS

SECTION 3 – AIRWAY AND RESPIRATORY MANAGEMENT

OBJECTIVES:

1. To create a properly functioning oxygen delivery system, through the assembly of individual components, capable of providing appropriate oxygen concentrations for the purpose of patient resuscitation and inhalation therapy
2. To provide the proper positioning of an unconscious patient for the purpose of maintaining patency of the patient's airway
3. To facilitate the patency of a patient's airway through the use of oropharyngeal, nasopharyngeal, and dual lumen style airway devices
4. To create a properly functioning suction system, through the assembly of individual system components, capable of removing foreign materials, blood, fluids and bodily secretions from the upper airway
5. To facilitate the removal of foreign body and/or displaced body tissues from the patient's upper airway through appropriate use of the MaGill forceps and laryngoscope
6. To provide adequate resuscitation and/or ventilatory assistance through the use of adjunct airway devices to include: the bag-valve-mask, pocket mask, and flow restricted oxygen powered ventilation device

GENERAL PRINCIPLES:

1. Use appropriate body substance isolation precautions
2. Always position the patient properly to assure an open airway
3. Open the airway using the head-tilt/chin lift or jaw thrust maneuvers
4. Modifications for maintaining the airway may be necessary due to the patient's injuries and/or condition
5. Confirm a patent airway by observing chest rise and fall, and air exchange
6. Artificial ventilation should never be delayed if airway adjuncts are not readily available

TEACHING POINTS

I. OXYGEN ADMINISTRATION/DISCONTINUANCE

IMPORTANT POINTS:
1. Oxygen cylinders must be handled carefully since the contents are under high pressure
2. Selection of a delivery device will depend on the patient's condition
3. Regulators reduce the cylinder's pressure to a safe level and regulate the flow of gas in liters per minute

SKILL:

A. OXYGEN ADMINISTRATION
   1. Identify oxygen cylinder by color, correct pin code and 100% USP marking
   2. Remove protective cap or tape
   3. Quickly open and close cylinder valve to "crack" so as to remove any impurities, which may have accumulated on the mating surfaces between the tank and regulator
   4. Attach regulator and flowmeter and insure a leakproof seal
   5. Turn on tank and check pressure gauge to insure adequate pressure
   6. Attach appropriate delivery device to flowmeter
   7. Adjust flow control to deliver recommended level
   8. Fit delivery device to patient
   9. Check adequacy of flow to patient

Tanks should retain a safe residual volume of 500 psi (local protocol)

B. OXYGEN DISCONTINUANCE
   1. Remove oxygen delivery device from patient
   2. Shut off cylinder and bleed regulator
   3. Return flowmeter control to "off" position

II. PATIENT POSITIONING (Non-trauma unresponsive patient)

IMPORTANT POINTS:
1. This position may be useful for maintaining a patent airway and preventing aspiration in patients who are unable to properly protect their own airway
2. Airway, ventilations and vital signs should be monitored continuously

TEACHING POINTS

SKILL:

A. RECOVERY/LATERAL RECUMBANT POSITION
   1. Roll the patient onto their side while supporting the head and neck
   2. Flex uppermost leg and position knee to support weight
   3. Position lower arm out behind patient or place lower arm and forearm under head for support
   4. Position upper arm along side patient's face to assist in supporting weight
   5. Ease patient's head back and jut chin to facilitate airway

III. OROPHARYNGEAL AIRWAY INSERTION (Unresponsive patient with no gag reflex)

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. Always measure airway
3. Use jaw thrust without head-tilt for patients with possible cervical spine injury
4. Tongue blade or similar device may be used to ease correct insertion

SKILL:

A. Select airway by measuring from the corner of the patient's lips to the bottom of the earlobe or angle of the jaw
B. Open mouth using cross-finger technique
C. Insert airway
   1. Adult only – with tip pointing toward roof of mouth, insert airway until point touches soft palette, rotate 180 degrees into position with flange resting against lips or teeth
   2. Adult, child or infant – Using a tongue depressor: Move the patient's tongue forward and down. Insert airway in anatomical position so as to follow the normal curvature of the oropharynx until the flange rests against the lips or teeth
D. Check for adequate air exchange

IV. NASOPHARYNGEAL AIRWAY INSERTION (Responsive or unresponsive patient)

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. If resistance is felt, remove and try other nares

TEACHING POINTS

SKILL:

A. Visualize the nares and select a nasopharyngeal airway slightly smaller in diameter than the patient's largest nare
B. Size the device by measuring from the tip of the patient's nose to the tip of the earlobe or angle of the jaw
C. Lubricate the distal surface of the airway with water or a water soluble lubricant
D. Insert the airway into the nares
    1. If placed in the right nare, insert so as to follow the normal anatomical curvature of the nasopharynx with the bevel toward the septum. Direct it along the floor of the nose and into the oropharynx
    2. If placed in the left nare, invert the airway so the bevel of the airway follows the septum of the nose. Once the tip of the airway reaches the nasopharynx, rotate the airway 180 degrees to resume alignment with the normal anatomical curvature of the nasopharynx. Continue to insert the airway into the oropharynx
E. Check for adequate air exchange

V. NON-VISUALIZED ADVANCED AIRWAY INSERTION

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. Ventilate the patient for a minimum of thirty (30) seconds prior to attempting to intubate
3. Patient must have inadequate or absent breathing
4. Patient must not have a gag reflex
5. All contraindications for airway use must be considered prior to insertion
6. A maximum of thirty (30) seconds should be allowed for each airway attempt
7. A maximum of three (3) attempts to intubate may be made
8. The patient should be ventilated for a minimum of thirty (30) seconds between intubation attempts
9. Definitive assurance of placement through proper auscultation of breath and gastric sounds must be made

TEACHING POINTS

10. Removal, when necessary, should not be delayed by repeated attempts to contact medical control
11. The ability to suction the airway must be constantly available when inserting or removing the airway
12. With esophageal placement, consider relieving gastric distention, as appropriate, using the suction catheter through tube #2

SKILL:

A. ESOPHAGEAL-TRACHEAL COMBITUBE (ETC)

1. INSERTION

a. Reconfirm assessment of absent or inadequate breathing without a gag reflex

b. Determine cuff integrity

1) Inflate cuffs
2) Disconnect syringes
3) Carefully inspect pharyngeal and distal cuffs
4) Carefully inspect valves and pilot cuffs
5) Deflate both cuffs

c. Prepare all necessary accessories

1) Preset inflation syringes to 100 mL and 15 mL (For Small Adult [SA] Model – Preset at 85 mL and 12 mL)
2) Bag-valve-mask with supplemental oxygen
3) Water soluble lubricant
4) Gastric tube
5) Suction device
6) Stethoscope

d. Suction as necessary

e. Hyperventilate for a minimum of thirty (30) seconds

f. Lubricate airway with water soluble lubricant as necessary

g. Position the patient supine with head in the neutral position. **DO NOT** hyperextend the patient's head

Use the tongue-jaw lift to open the airway. **Use appropriate C-spine stabilization in cases of known or suspected trauma**

h. Remove oropharyngeal or nasopharyngeal airway if previously inserted

i. Inspect patient's airway for obstructions, broken teeth, dentures, dental appliances or other items that could damage cuffs

TEACHING POINTS

j. While holding the patient's tongue and lower jaw to facilitate insertion:
   1) Insert Combitube airway following the normal anatomical curvature of the oropharynx
   2) Insert firmly but gently until the insertion markers (two black lines which encircle the proximal end of the airway) are aligned on opposite sides of the patient's teeth or gums
      (a) **DO NOT USE FORCE** – If airway does not insert easily, withdraw and **reattempt**
      (b) Hyperventilate for a minimum of thirty (30) seconds between attempts
      (c) Maximum of thirty (30) seconds for each attempt
      (d) Maximum of three (3) attempts
      (e) Suction as necessary between attempts

k. When Combitube is positioned
   1) Inflate the pharyngeal cuff with 100 mL of air using large syringe (85 mL for Small Adult [SA] Model) through line #1 (blue)
   2) Insure Combitube has remained in proper position. (Combitube will move slightly with inflation)
   3) Remove syringe and insure pharyngeal cuff inflation has occurred by observing pilot balloon
   4) Inflate distal cuff with 15 mL of air using smaller syringe (12 mL for Small Adult [SA] Model) through line #2 (white)
   5) Remove syringe and insure distal cuff inflation has occurred by observing pilot balloon

Always be certain that both syringes stay with the patient as long as s/he is intubated with the Combitube

l. Ventilate the patient
   1) Attach bag-valve-mask (BVM) to primary tube #1 (blue) and ventilate patient
   2) While ventilating, confirm tube placement by auscultation of breath and epigastric sounds
      (a) Assess breath and epigastric sounds
         i. Esophageal placement
            (1) Breath sounds present high axillary
            (2) Breath sounds present bilaterally
            (3) Epigastric sounds are absent
            (4) Continue to ventilate through tube #1 (blue)

The presence of certain chest injuries (i.e. pneumothorax, hemothorax, etc) will result in absent or diminished breath sounds on the affected side(s) even with proper placement

TEACHING POINTS

ii. Tracheal placement
- (1) Breath sounds **are not** present high axillary
- (2) Breath sounds **are not** present bilaterally
- (3) Epigastric sounds **are** present
- (4) Discontinue ventilation through primary tube #1 (blue)
- (5) Ventilate through secondary tube #2 (clear)
- (6) Reassess breath and epigastric sounds to confirm tracheal placement

Local protocols may alter the sequence in which breath and epigastric sounds are checked.

iii. Unknown placement
- (1) Breath sounds **are not** present high axillary
- (2) Breath sounds **are not** present bilaterally
- (3) Epigastric sounds **are not** absent
- (4) Deflate cuffs (blue then white)
- (5) Reposition airway – withdrawing approximately ½ inch
- (6) Reinflate cuffs with appropriate volume of air (blue then white)
- (7) Begin ventilations through primary tube #1 (blue) and reassess breath and epigastric sounds to confirm placement
- (8) Ventilate as appropriate

Bilateral breath sounds, and/or epigastric sounds, may or may not be present due to reasons other than incorrect tube placement

iv. Placement remains unknown
- (1) Deflate cuffs (blue then white)
- (2) Extubate
- (3) Suction as necessary
- (4) Hyperventilate patient for a minimum of thirty (30) seconds
- (5) Reattempt intubation (maximum of three (3) attempts)
- (6) If, after three (3) attempts, proper placement can not be determined, extubate patient, hyperventilate and resume basic airway management techniques
- (7) Hyperventilate patient for a minimum of thirty (30) seconds following each intubation attempt
- (8) Continue to ventilate while monitoring airway placement and vital signs

TEACHING POINTS

2. REMOVAL
   a. Contact medical control (local protocol)
   b. Prepare suction and emesis collection devices — Expect that the patient will vomit
   c. Position patient in lateral recumbent position, observing appropriate C-spine precautions for trauma patients
   d. Use large syringe to deflate cuff #1 (blue) until pilot balloon is completely deflated
   e. Use small syringe to deflate cuff #2 (white) until pilot balloon is completely deflated
   f. Immediately withdraw airway with a smooth and steady motion while maintaining normal curvature of the pharynx
   g. Suction as necessary
   h. Monitor the patient's airway and breathing closely
   i. Provide high-flow oxygen via non-rebreather mask
   j. Consider nasopharyngeal airway and assist ventilations as necessary

VI. ENDOTRACHEAL INTUBATION

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. Ventilate the patient for a minimum of thirty (30) seconds prior to attempting to intubate
3. Verify baseline breath sounds using basic airway skills prior to intubation
4. Patient must have inadequate or absent breathing
5. Patient must not have a gag reflex
6. All contraindications for airway use must be considered prior to insertion
7. A maximum of thirty (30) seconds should be allowed for each intubation attempt
8. A maximum of three (3) attempts to intubate may be made
9. The patient should be ventilated for a minimum of thirty (30) seconds between intubation attempts
10. Definitive assurance of tracheal placement through auscultation of breath and epigastric sounds, plus one additional device (ET bulb, syringe or end-tidal CO_2 detectors) must be made
11. The ability to suction the airway must be constantly available when inserting or removing the endotracheal tube
12. The laryngoscope should never be pried or levered against the patient's teeth

TEACHING POINTS

SKILL:

A. INSERTION

1. Reconfirm original assessment of absent or inadequate breathing and an absence of a gag reflex
2. Determine proper endotracheal tube
   a. Size
   b. Cuffed/uncuffed
3. Determine cuff integrity:
   a. Inflate cuff
   b. Disconnect syringe
   c. Carefully inspect cuff
   d. Carefully inspect valve and pilot balloon
   e. Deflate cuff, leaving syringe attached
4. Choose appropriately sized laryngoscope handle and blade
5. Assemble blade and handle, insure the light is bright and tightly secured in the blade
6. Prepare all necessary equipment and supplies:
   a. Preset inflation syringe to 5 – 10 mL or manufacturer's recommendation
   b. Bag-valve-mask with supplemental oxygen
   c. Water soluble lubricant
   d. Suction device
   e. Stethoscope and other placement confirmation devices per local protocol
   f. Laryngoscope blade and handle
   g. Stylette (per protocol)
7. Suction as necessary
8. Hyperventilate for a minimum of thirty (30) seconds
9. Lubricate distal end of tube with water soluble lubricant
10. Insert stylette and shape tube — Stylette must not extend beyond the Murphy eye of the tube
11. Position supine with head in sniffing position unless contraindicated
12. Holding laryngoscope in left hand, insert blade in right side of patient's mouth and sweep tongue to the left
13. Advance tip of curved blade into vallecula; straight blade under epiglottis
14. Direct assistant to apply Sellick's maneuver (cricoid pressure) as appropriate
15. Lift handle, avoiding placing any pressure on teeth or lips, to expose the glottic opening
16. Advance ET tube between the vocal cords approximately 1 - 2 cm (1/2 to 3/4 inch)

TEACHING POINTS

17. Note depth of tube at teeth
18. Holding tube firmly to prevent accidental extubation, remove stylette, if used
19. Inflate cuff with 5 – 10 mL of air and remove syringe
20. Confirm proper tube placement
    a. Ventilate using bag-valve-mask
    b. Auscultate chest bilaterally at mid-axillary line for presence of breath sounds
        1) If breath sounds are present, but only on one side
            a) Deflate the cuff and pull tube back 1 - 2 cm
            b) Reinflate cuff and auscultate breath sounds
            c) Secure in place if bilateral breath sounds are present
        2) If breath sounds are not present, immediately auscultate epigastric areas for presence of gastric sounds:
            a) If gastric sounds are present, immediately deflate cuff and extubate patient
            b) Hyperventilate a minimum of thirty (30) seconds before reattempting intubation
        3) If proper placement can not be determined:
            a) Deflate cuff and extubate
            b) Suction as necessary
            c) Insert oropharyngeal airway
            d) Hyperventilate a minimum of thirty (30) seconds
            e) Consider Combitube or maintain basic airway care
    c. Apply end-tidal CO_2 detector or esophageal detector device per local protocol to determine placement
    d. Hyperventilate patient with 100% oxygen
    e. Secure tube in place using tape or commercial device
    f. Continue to ventilate while carefully monitoring patient's status

The presence of certain chest injuries (i.e. pneumothorax, hemothorax, etc) will result in absent or diminished breath sounds on the affected side(s) even with proper placement

Local protocols may alter the sequence in which breath and epigastric sounds are checked

VII. PHARYNGEAL SUCTION

IMPORTANT POINTS:
1. Use appropriate body substance isolation precautions
2. Always measure flexible catheter
3. Use cross-finger technique or tongue blade devices to prevent rescuer and/or patient injury
4. Suction after the device is inserted
5. Suction the mouth first, then the nose on infants

TEACHING POINTS

SKILL:

A. FLEXIBLE/RIGID TIP
   1. Attach suction tip to suction device
   2. Measure flexible catheter from tip of earlobe to corner of mouth to determine insertion length
   3. Switch on suction unit (or begin pumping) and insure suction is present
   4. Open mouth using cross-finger technique or tongue blade device
   5. Insert suction device to oropharynx with no suction at tip — Do not lose sight of the distal tip of rigid wands
   6. Suction across oropharynx (maximum of 15 seconds)
   7. Remove device while maintaining suction
   8. Flush system with water as necessary

B. BULB SYRINGE (Infants)
   1. Squeeze air from bulb prior to insertion
   2. Gradually reduce pressure on bulb to provide suction while removing from nose or mouth
   3. Repeat as necessary

VIII. LARYNGOSCOPE AND MAGILL FORCEPS

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. The laryngoscope should **never** be pried or levered against the teeth
3. The MaGill forceps should be held so the handle does not obstruct the view of the pharynx

SKILL:

1. Choose adult or pediatric blade and attach to handle; or, select appropriate size disposable laryngoscope, and turn on light source — Curved blades are to be used for foreign body removal
2. Place the patient's head in the "sniffing" position
3. Hold laryngoscope in left hand
   A. Adult patient – Hold handle with entire hand
   B. Infant patient – Hold handle with thumb, index and middle fingers
4. With the rescuer in the cephalic position, insert blade in right side of mouth and displace tongue to left by moving blade to midline

TEACHING POINTS

5. In infant: Support chin with ring and little fingers of left hand for leverage
6. Lift tongue in direction of long axis of the handle without prying on teeth or gums
7. Visualize obstruction
8. Holding the MaGill forceps in the right hand, remove obstruction
9. Visualize airway for further obstructions before removing laryngoscope blade

IX. BAG-VALVE-MASK VENTILATION

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. This technique should be used with supplemental oxygen to deliver high concentrations of oxygen
3. The bag-valve-mask may be used on patients who are not breathing or patients who are breathing but not exchanging adequate amounts of air — Discuss pediatric pop-off valves
4. This procedure should be performed as a two rescuer technique whenever possible
5. Appropriate C-spine considerations should be taken when managing patients with potential spinal injuries

SKILL:

1. Select and insert appropriate airway adjunct
2. Select adult, pediatric or infant size bag-valve-mask and assemble components
3. Attach oxygen supply to bag-valve-mask; adjust oxygen supply to recommended level
4. Seal mask on patient's face while maintaining head-tilt, chin-lift or attach to advanced airway adjunct fitting — Use modified jaw thrust with C-spine stabilization if potential for spinal injury exists
5. Squeeze bag, ventilating patient according to AHA guidelines
6. Observe chest rise and fall with each ventilation. If no chest rise, reassess equipment, technique and patient
7. If two rescuers are available, one rescuer uses two hands to maintain the airway and mask seal, while the second rescuer uses two hands to compress the bag to provide ventilations

TEACHING POINTS

X. FLOW-RESTRICTED, OXYGEN-POWERED VENTILATION DEVICE

IMPORTANT POINTS:
1. Use appropriate body substance isolation precautions
2. Prolonged depression of ventilation button may result in gastric distention
3. Proper airway positioning minimizes the potential of gastric distention
4. The Flow-Restricted, Oxygen-Powered Ventilation Device is not recommended for use with pediatric or trauma patients
5. Must be reduced to deliver no more than 40 LPM of oxygen
6. May be used by spontaneously breathing patients
7. Follow local medical protocols governing the use of this device
8. Appropriate C-spine considerations should be taken when managing patients with potential spinal injuries

SKILL:
1. Connect device to oxygen source
2. Open cylinder and check for leaks
3. Select and insert appropriate airway adjunct, if indicated
4. Press ventilation button to clear line and check operation
5. Seal mask on patient's face while maintaining head-tilt, chin-lift or attach to advanced airway adjunct fitting
6. Depress ventilation button until patient's chest rises
7. Release ventilation button and observe patient's exhalation
8. Ventilate per AHA guidelines

Use modified jaw thrust with C-spine stabilization if potential for spinal injury exists

XI. POCKET MASK

IMPORTANT POINTS:
1. Use appropriate body substance isolation precautions
2. Oxygen concentrations will be increased by attaching supplemental oxygen
3. Appropriate C-spine considerations should be taken when managing patients with potential spinal injuries

TEACHING POINTS

SKILL:

1. Select and insert properly sized oropharyngeal or nasopharyngeal airway, if available
2. Unfold pocket mask as appropriate and attach one-way valve
3. If available, attach oxygen delivery tube to oxygen source and to mask inlet
4. Turn on oxygen and adjust liter flow to recommended level
5. While maintaining head-tilt, chin-lift, seal mask on patient's face
6. Ventilate patient through one-way valve attached to mask until chest rises
7. Allow patient to exhale while maintaining mask seal to face
8. Repeat ventilations per AHA guidelines

Use modified jaw thrust with C-spine stabilization if potential for spinal injury exists

TEACHING POINTS

SECTION 4 – PATIENT ASSESSMENT

General Information:

The assessment process recognizes that trauma patients and medical patients have different assessment priorities. Patients may be divided into four broad categories: Medical patients who are responsive; Medical patients who are not responsive; Trauma patients with a significant mechanism of injury (MOI); and, Trauma patients without a significant mechanism of injury. Trauma patients are assigned a category based on severity, or potential severity, of their injuries. Medical patients, on the other hand, are assigned based on their ability to participate, or not participate, in the assessment rather than on the severity of their illnesses.

OBJECTIVES:

1. To determine the presence or absence of actual or potential hazards which pose a threat to the health and safety of rescuers, patients or bystanders during rescuer operations and/or during transport
2. To determine the presence or absence of injury or illness through a systematic assessment process incorporating inspection, auscultation, palpation, and the taking of a patient history

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. ALWAYS conduct a scene size-up to determine that the scene is safe for rescuer, patient and bystanders
3. If a scene is not safe, and cannot be made safe, do not enter
4. Always obtain a general impression of the patient and conduct an initial assessment of the patient's mental status, airway, breathing and circulation (including a visual check for life-threatening external bleeding) no matter how stable a patient appears
5. Patients who are not responsive should include those with an altered mental status and those who are unable to respond reliably or provide a history

TEACHING POINTS

6. Intervene immediately to correct any life-threatening problem
   Remember: Any airway, breathing, circulation problem or severe external bleeding, which cannot be managed during the initial assessment, mandates urgent transport with continued efforts to manage the problem en route
7. A patient's condition may deteriorate rapidly. Perform frequent reassessments of the patient's mental status, airway, breathing and circulation
8. If the patient becomes unstable at any time, immediately repeat the initial assessment

SKILL:

I. PATIENT ASSESSMENT

A. SCENE SIZE-UP
   1. Determine the Nature of Illness (NOI) or Mechanism of Injury (MOI)
      a. En route to scene:
         1) Dispatch information
         2) Other units at scene
      b. Upon arrival at scene:
         1) Inspect the scene
         2) Patient, family, witnesses, bystanders, other rescuers
   2. Use appropriate body substance isolation precautions
   3. Determine whether the scene is safe
      a. Environmental considerations
      b. Social considerations
      c. Crime scene considerations
      d. Unruly or violent persons
      e. Unstable surfaces
      f. Other hazards
      g. If the scene is not safe, make it safe, or do not enter
   4. Determine the number of patients
   5. Consider need for manual C-spine stabilization
   6. Determine the need for, and request, additional resources prior to patient contact

TEACHING POINTS

B. INITIAL ASSESSMENT
1. Form a general impression of the patient as you approach, while telling the patient your first name and explaining that you are an EMT
   a. Establish approximate age
   b. Establish gender
   c. Identify chief complaint
   d. Assess environment clues
   e. Identify any obvious life-threatening conditions requiring urgent intervention
   f. Intervene immediately to correct any life-threatening conditions
2. Assess the patient's mental status and provide C-spine stabilization as appropriate
   a. Speak to the patient
   b. **A**lert
      Responds to **V**erbal stimuli
      Responds to **P**ainful stimuli
      Unresponsive
3. Assess the patient's airway
   a. Is the patient talking or crying?
      1) Yes: Assess breathing
      2) No: Open airway
4. Assess the patient's breathing
   a. If the patient is not responsive, but breathing is adequate, open and maintain the airway and initiate oxygen therapy
   b. If the patient is not breathing adequately (less than 8 or more than 24 times per minute), open and maintain the airway, initiate oxygen therapy, utilize appropriate adjuncts and/or assist ventilations
   c. If the patient is not breathing, open and maintain the airway, utilize appropriate adjuncts and ventilate with supplemental oxygen
5. Assess the patient's circulation
   a. Pulse - present
      1) Less than one year old: Palpate the brachial artery
      2) More than one year old and responsive: Palpate the radial artery
      3) More than one year old and unresponsive; or more than one year old with absent radial pulse: Palpate carotid pulse

TEACHING POINTS

b. If pulse - absent
   1) Initiate CPR
   2) Implement AED protocol as appropriate
c. Assess and control major external bleeding
d. Assess skin color, temperature and condition (Assess capillary refill in patients under six years or age)

6. Determine the patient's transport priority, consider ALS back-up

C. FOCUSED HISTORY AND PHYSICAL EXAM

1. Assign the patient to one of the four patient assessment categories to determine which of the following items apply to that patient. The sequence in which these items are performed may depend on circumstances, the number of available EMTs and the presence of life-threatening problems requiring urgent intervention. **Remember:** The patient's priority is constantly being evaluated and subject to change
2. Reconsider NOI or MOI as necessary
3. Obtain a SAMPLE history
   a. **S**igns and symptoms
   b. **A**llergies
      1) Medicines
      2) Foods
      3) Environmental
   c. **M**edications
      1) Prescriptions
      2) Over-the-counter
      3) Alternative medication, herbal supplements
   d. **P**ertinent/past medical history
      1) Heart disease
      2) Diabetes
      3) Seizures
      4) Recent hospitalizations
      5) Recent injuries
      6) Medical patients: previous similar episodes
   e. **L**ast oral intake
   f. **E**vents leading to this call

TEACHING POINTS

4. Assess baseline vital signs
   a. Breathing - rate, rhythm and quality
   b. Pulse - rate, rhythm and quality
   c. Blood pressure
   d. Pupils
   e. Skin color and condition (Capillary refill under 6 years of age) – if not previously done
5. Perform an appropriate physical exam
   a. Physical assessment conducted for a responsive medical patient or a trauma patient with no significant mechanism of injury should be based on the patient's chief complaint
   b. Rapid trauma assessment
      1) DCAP/BTLS
      2) While maintaining manual stabilization, apply cervical collar only after neck has been assessed
      3) Assess for obvious signs of trauma, plus:
         a) Head: Crepitus
         b) Neck: Jugular vein distention, crepitus
         c) Chest: Paradoxical motion, crepitus, bilateral breath sounds (mid-axillary, mid-clavicular)
         d) Abdomen: Rigidity, guarding, distention
         e) Pelvis: Gently compress for pain or crepitus, inspect for incontinence, priapism
         f) All extremities: Distal circulation, movement and sensation
      4) Roll patient taking appropriate spinal precautions, and assess posterior
6. Assess history of present illness (OPQRST)
   a. **O**nset
   b. **P**rovocation
   c. **Q**uality
   d. **R**adiation
   e. **S**everity
   f. **T**ime

   OPQRST may be used for evaluating pain associated with trauma injuries
7. Initiate appropriate interventions and make transport decision

TEACHING POINTS

D. DETAILED PHYSICAL ASSESSMENT
   1. Limited to the patient with a significant MOI
   2. Performed as time permits, in the ambulance, during transport
   3. Repeat rapid trauma assessment with emphasis on:
      a. Ears: Drainage or blood, cerebral spinal fluid
      b. Eyes: Discoloration, equality, foreign bodies, blood in the anterior chamber
      c. Nose: Drainage of blood or cerebral spinal fluid
      d. Mouth: Loose or missing teeth, obstructions, soft tissue injuries
      e. Careful evaluation for potentially subtle signs on trunk and extremities
   4. Assess baseline vital signs if not done previously

E. ONGOING ASSESSMENT
   1. Repeat initial assessment and reassess vital signs
      a. At least every five minutes for urgent, unstable or deteriorating patients
      b. At least every fifteen minutes for non-urgent, stable patients
      c. Any time the patient's condition is noted to change
   2. Repeat focused assessment regarding patient's chief complaint or injuries
   3. Check interventions
      a. Adequacy of oxygen delivery, assisted ventilations or artificial ventilations
      b. Management of soft tissue injuries
      c. Adequacy of other interventions

Patient Assessment

SCENE SIZE-UP

MOI / NOI
Body Substance Isolation precautions
Scene safety
Number of patients
Consider C-spine stabilization
Other resources needed

INITIAL ASSESSMENT

General impression
Mental status
Airway - Intervene if necessary
Breathing - Intervene if necessary
Circulation - Intervene if necessary
Determine transport priority, consider ALS backup

FOCUSED HISTORY AND PHYSICAL EXAM *

Reconsider MOI / NOI
SAMPLE history
Baseline vital signs
PLUS ...

* Circumstances may alter the assessment sequence

TRAUMA NO SIGNIFICANT MOI

Limited physical exam
Interventions and transport

TRAUMA SIGNIFICANT MOI

Reconsider C-spine stabilization
Rapid trauma assessment (DCAP - BTLS)
Interventions and transport

MEDICAL RESPONSIVE

History of present illness (OPQRST)
Limited physical exam
Interventions and transport

MEDICAL NOT RESPONSIVE

Reconsider C-spine stabilization
Rapid trauma assessment (DCAP - BTLS)
History of present illness (OPQRST)
Interventions and transport

DETAILED PHYSICAL EXAM

Significant MOI, or Medical Not Responsive
In ambulance, During transport, If time

ONGOING ASSESSMENT

Repeat initial assessment
Repeat focused assessment
Recheck vital signs
Check interventions

TEACHING POINTS

SECTION 5 – CARDIAC MANAGEMENT AND OBSTRUCTED AIRWAY PROCEDURES

I. CARDIOPULMONARY RESUSCITATION

All Cardiopulmonary Resuscitation procedures shall be performed as directed in the current American Heart Association guidelines

II. OBSTRUCTED AIRWAY PROCEDURES

All obstructed airway procedures shall be performed as directed in current American Heart Association guidelines

III. AUTOMATED EXTERNAL DEFIBRILLATION

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. Always rely on signs and symptoms to determine patient's status
3. Never rely on an electronic or mechanical device to determine the presence or absence of a pulse
4. Defibrillation comes first. Never delay defibrillation for any reason other than safety concerns
5. Electrode pads intended for defibrillation should be attached only to pulseless, non-breathing patients
6. Defibrillation should not be attempted with patients less than 8 years of age or weighing less than 25 kg (55 lbs)
7. While it is not necessary to establish medical control prior to defibrillation, it is recommended that it be done as soon as possible
8. Assuming no on-scene advanced life support is present or expected to arrive on-scene momentarily, the patient should be transported when any of the following occur: 1) The patient regains a pulse; 2) Six shocks have been delivered; or, 3) The AED gives three consecutive messages (separated by one minute of CPR) that no shock is advised
9. A pulse check should occur after any "no shock advised" message and following the delivery of the third shock of any uninterrupted series

TEACHING POINTS

SKILL:

1. Perform an initial assessment
   A. Expose the chest and remove other clothing as appropriate
2. Stop CPR if in progress
3. Verify absence of pulse and breathing
4. If adequate personnel are present, resume CPR
5. Turn on defibrillator and attach defibrillation pads per manufacturer's recommendation
6. Attach device to patient
   A. Attach the negative electrode (normally white) to the patient's right anterior chest wall slightly inferior to the clavicle at the mid-clavicular line
   B. Attach the positive electrode (normally red) to the patient's left lateral chest wall at the mid-axillary line and slightly inferior to the nipple line
   C. Insure each pad is securely and firmly adhering to the patient

   Dry, shave or clean the patient's skin as appropriate to provide adequate adhesion of electrode pads
7. Stop CPR
8. Direct everyone to stand clear of the patient
9. Initiate rhythm analysis
   A. Machine advises shock:
      1. Deliver shock
      2. Re-analyze rhythm
      3. If machine advises shock, deliver second shock
      4. Re-analyze rhythm
      5. If machine advises shock, deliver third shock
      6. Check pulse
         a. If pulse is present, check breathing
            1) If breathing is present and adequate, give high concentration oxygen via non-rebreather mask
            2) If breathing is absent or inadequate, insert advanced airway and artificially ventilate with high flow oxygen and transport
         b. If no pulse is present, resume CPR for one minute and consider inserting advanced airway, if not done previously
            1) Stop CPR
            2) Reanalyze rhythm
            3) Repeat cycle of up to three stacked shocks
            4) Transport

   No physical contact with the patient should occur when rhythm analysis is being conducted

   Some AEDs will automatically re-analyze a rhythm immediately after delivering a shock

   Discuss need to stop vehicle. Discuss possible sources of artifacts

TEACHING POINTS

B. If, at the end of any rhythm analysis, the machine advises no shock is indicated, check pulse
   1. If pulse is present, check breathing
      a. If breathing is present and adequate, give high concentration oxygen via non-rebreather mask
      b. If breathing is absent or inadequate, insert advanced airway and artificially ventilate with high concentration oxygen and transport
   2. If no pulse is present, resume CPR for one minute and consider inserting advanced airway if not previously inserted
      a. Repeat rhythm analysis
         1) If shock advised, deliver up to two sets of three stacked shocks separated by one minute of CPR
         2) If no shock is advised and no pulse is present, resume CPR for one minute
         3) Analyze rhythm a third time, if shock advised deliver up to three stacked shocks
         4) If no shock is advised, resume CPR and transport

TEACHING POINTS

SECTION 6 - MEDICATION PREPARATION AND ADMINISTRATION

OBJECTIVES:

1. To prepare the appropriate delivery device for the purpose of administering medications
2. To prepare the appropriate delivery device for the purpose of administering fluids
3. To prepare the appropriate device for the purpose of performing a blood draw
4. To prepare the appropriate delivery device for the purpose of administering a medication via a hand-held, small volume nebulizer
5. To administer medication via one of the parenteral routes

IMPORTANT POINTS:

1. Use appropriate body substance isolation precautions
2. Medication must be administered in compliance with local protocols and medical direction pertaining to prior approval and dose
3. A comprehensive assessment must be performed on all patients to whom medications will be administered
4. Any known or suspected circumstances which may contraindicate the use of any medication must be made known to medical control prior to requesting authorization to administer the medication
5. All skills in this section assume the patient is being provided with supplemental oxygen as appropriate
6. Before administering any medication, **always** be certain you have:
    - The right patient
    - The right medication
    - The right dose
    - The right time
    - The right route
    - The right documentation
7. **Always** insure that all sharps are properly disposed of in a timely manner

TEACHING POINTS

8. Documentation should include: (Per local protocol)
   - Medication
   - Dose delivered
   - Route
   - Site/method
   - Time given
   - Physician ordering medication
   - EMT delivering medication
9. Non-intact packaging may indicate loss of sterility

I. PREPARATORY SKILLS: (Delivery Devices)

A. ORAL MEDICATIONS

1. Tablets
   a. Carefully inspect the medication to insure it:
      1) Contains the correct medication
      2) Contains the correct dose
      3) Has not expired
      4) Has not been contaminated in any manner
   b. Shake out the proper number of tablets to obtain the proper dose
   c. Recheck the label for proper medication and dosage information
   d. Give directions to patient for medication administration
   e. The medication is now ready to be administered

The tablets should be placed in the lid of the medication bottle or an appropriate container

The medication should be transferred from the lid to the patient's hand or to the rescuer's gloved hand for administration

2. Sublingual spray
   a. Carefully inspect the medication to insure it:
      1) Contains the correct medication
      2) Contains the correct dose
      3) Has not expired
      4) Has not been contaminated in any manner
   b. Give directions to patient for medication administration
   c. The medication is now ready to be administered

TEACHING POINTS

3. Buccal
   a. Carefully inspect the medication to insure it:
      1) Contains the correct medication
      2) Contains the correct dose
      3) Has not expired
      4) Has not been contaminated in any manner
   b. Give directions to patient for medication administration — The medication may be applied to a tongue depressor for administration
   c. The medication is now ready to be administered

B. SYRINGE AND VIAL
1. Select a syringe of appropriate size for the volume of medication to be delivered
2. Select a needle of appropriate size and length and attach to the syringe being careful to maintain sterile fields
3. Carefully inspect the vial of medication to insure it:
   a. Contains the correct medication
   b. Contains the correct concentration
   c. Has not expired
   d. Contains no particulates or discoloration
   e. Has not been contaminated in any manner
4. Remove the protective cap from the top of the vial and wipe the rubber stopper with an alcohol prep or other suitable antiseptic swab
5. Remove the needle protector from the needle and syringe assembly and draw in a volume of air equivalent to the volume of fluid to be withdrawn from the vial
6. Insert the needle through the stopper so that the tip of the needle can be seen inside the vial
7. Depress the plunger of the syringe to inject the air into the vial
8. Holding the vial upside down in one hand and being careful to keep the end of the needle within the fluid level of the vial, pull back gently on the plunger to draw slightly more than the ordered amount of medication into the syringe
9. Withdraw the needle and syringe from the vial

TEACHING POINTS

10. With the point of the needle directed upward, tap the syringe to move any air bubbles to the top
11. Gently depress the plunger of the syringe until only the desired amount of medication remains in the syringe
12. The medication is now ready to be delivered

C. SYRINGE AND AMPULE

1. Select a syringe of appropriate size for the volume of medication to be delivered
2. Select a **filter needle** of appropriate size and length to withdraw the required volume of medication and attach to the syringe being careful to maintain sterile fields
3. Carefully inspect the ampule of medication to insure it:
   a. Contains the correct medication
   b. Contains the correct concentration
   c. Has not expired
   d. Contains no particulates or discoloration
   e. Is not cracked, chipped, or contaminated in any manner
4. Hold the ampule upright and gently "flick" it to move any medication trapped in the head of the ampule to the base
5. Once the medication is removed from the head of the ampule, use a commercially available device or a gauze square to grasp the head of the ampule and break the head from the base
6. Using the filter needle and syringe and being careful not to contaminate the sterile field, withdraw slightly more medication than is ordered for administration. Discard any remaining medication and properly dispose of both portions of the ampule in a sharps container
7. Remove the filter needle used to withdraw the medication from the ampule and replace with an approved safety needle assembly of appropriate size and length being certain to properly dispose of the filter needle in an sharps container
8. With the needle pointing upward, gently tap the syringe to move any air bubbles to the top of the syringe
9. Gently depress the plunger of the syringe until only the desired amount of medication remains in the syringe
10. The medication is now ready to be delivered

Also called a "Filter Straw"

Hold the ampule at arms length and break by snapping the top toward you. This will cause any glass shards to be directed away rather than toward you when the ampule breaks

If the ampule fails to break cleanly and glass shards can be observed, dispose of the ampule and replace with another

TEACHING POINTS

D. PRE-LOADED SYRINGES
1. Pre-filled Systems
   a. Carefully inspect the medication cartridge to insure it:
      1) Contains the correct medication
      2) Contains the correct concentration
      3) Has not expired
      4) Contains no particulates or discoloration
      5) Has not been contaminated in any manner
   b. Remove the protective caps from the medication cartridge and the barrel of the syringe assembly
   c. Insert the medication cartridge into the barrel assembly and rotate clockwise until the medication cartridge is screwed into the barrel
   d. With the unit now fully assembled, remove the needle protector and purge any excess air and medication from the syringe
   e. The medication is now ready to be delivered
2. Tubex Systems (plastic)
   a. Carefully inspect the medication cartridge to insure it:
      1) Contains the correct medication
      2) Contains the correct concentration
      3) Has not expired
      4) Contains no particulates or discoloration
      5) Has not been contaminated in any manner
   b. Fully retract the plunger and insert the preloaded medication cartridge into the tubex handle
   c. Rotate the collar of the device counter-clockwise to tighten the cartridge into the handle
   d. Rotate the plunger handle clockwise to attach the handle to the administration device to the plunger of the preloaded medication cartridge
   e. With the needle pointing upward, remove the needle protector and purge any air or excess medication from the tubex assembly
   f. The medication is now ready to be delivered

TEACHING POINTS

3. Carpuject Systems
   a. Carefully inspect the medication cartridge to insure it:
      1) Contains the correct medication
      2) Contains the correct concentration
      3) Has not expired
      4) Contains no particulates or discoloration
      5) Has not been contaminated in any manner
   b. Rotate the two sections of the Carpuject handle until they are at 90 degree angles to one another
   c. Fully retract the plunger and insert the preloaded medication cartridge into the Carpuject handle with the plunger end inserted first and the needle end resting firmly against the base
   d. Rotate the top half of the Carpuject handle clockwise until it aligns with the bottom half to tighten the cartridge into the handle
   e. Rotate the plunger handle clockwise to attach it to the plunger of the preloaded medication cartridge
   f. With the needle pointing upward, remove the needle protector and purge any air or excess medication from the Carpuject assembly
   g. The medication is now ready to be delivered
4. Auto-injector systems
   a. Carefully inspect the medication cartridge to insure it:
      1) Contains the correct medication
      2) Contains the correct concentration
      3) Has not expired
      4) Contains no particulates or discoloration
      5) Has not been contaminated in any manner
   b. Remove the safety cap only after placing the device against the previously prepared injection site
   c. The medication is now ready to be administered

Never place your thumb over the "end" of the auto-injector

E. IV ADMINISTRATION SET
   1. Select the appropriate solution
      a. Carefully inspect the solution to insure it:
         1) Contains the correct solution

Solution choice should be based on patient condition and local protocols

TEACHING POINTS

2) Contains the correct concentration
3) Has not expired
4) Contains no particulates or discoloration
5) Has not been contaminated in any manner

b. Open outer packaging by tearing pre-cut slit at either end of the bag
1) Recheck clarity
Note: that a slight amount of moisture inside the outer bag is normal and not cause for concern

2. Select an appropriate IV administration set — Discussion of macro versus micro infusion sets
3. Open the administration set
a. Check to be certain the end caps that preserve the sterile field of the administration set remain in place
b. Uncoil the tubing in preparation for spiking the IV bag
c. If adjunct devices such as extensions or flow meters are to be used, they should be opened and attached to the administration set at this time
4. Slide the flow control clamp to a convenient location and rotate the control knob to close off the IV tubing
5. Spike the IV bag — Whenever possible, the IV bag should be hung in a vertical position to facilitate preparation
a. Method one
1) If not previously done, hang the IV bag with the tail ports extending downward
2) Remove the protective cap from the IV tubing spike being careful to protect the sterile field
3) Grasp the IV port just above the plastic tab. With the other hand, pull the plastic tab from the port. Be careful to maintain sterility of the port
4) Insert the IV tubing spike into the IV port by pushing and twisting the spike until it punctures the seal of the port
5) Squeeze the drip chamber as necessary to fill it approximately half full of fluid — If too much fluid enters the drip chamber, invert the bag and drip chamber and squeeze some of the fluid back into the bag
b. Method two
1) Holding the IV bag at its base, invert the bag so the tail ports extend upward
2) Remove the protective cap from the IV tubing spike being careful to protect the sterile field
3) While continuing to hold the IV bag, grasp its IV port just below the plastic tab. With the other hand, pull the plastic tab from the port. Be careful to maintain sterility of the port

TEACHING POINTS

4) Insert the IV tubing spike into the IV port by pushing and twisting the spike until it punctures the seal of the port
5) Invert the bag so it is again in its upright position and squeeze the drip chamber as often as necessary to fill it approximately half full of fluid

6. Place the end of the tubing in a convenient location that will not be affected by fluid lost as the IV line is flushed. Be certain the protective cap remains in place to preserve the sterile field
7. Open the flow control clamp and allow the IV fluid to completely fill the line. It is often necessary to invert and "flick" med-ports or junctions between attachments with your fingers to remove larger air bubbles
8. Once the line is completely filled with fluid, and any larger air bubbles removed, close the flow clamp and place the "primed" line in position for use

F. HAND-HELD SMALL VOLUME NEBULIZER
1. Select a nebulizer assembly
2. Attach the reservoir hose and mouth piece to opposite ends of the "T" fitting
3. Assemble the top and bottom sections of the atomization chamber by screwing them together
4. Attach the oxygen tubing to the inlet port of the atomizer chamber. Attach the other end to an oxygen source capable of delivering a 6–8 lpm flow
5. Place the ordered dose of medication into the atomization chamber and attach the atomization chamber to the bottom of the "T" fitting
   a. If a mask is to be used, remove the mouth piece, reservoir hose and "T" fitting
   b. Attach the atomization chamber directly to the mask
6. Turn on oxygen and adjust flow for best results

Much of the mist that can actually be seen is too large to actually be absorbed

G. MEDICATION PREPARATION (Reconstituting)
1. Multi-vial sets
   a. Inspect the packaging and both vials to insure it:
      1) Contains the correct solution
      2) Contains the correct concentration
      3) Has not expired
      4) Contains no particulates or discoloration
      5) Has not been contaminated in any manner

TEACHING POINTS

b. Remove the "flip-off" seals from both vials
c. Wipe the rubber stoppers with an alcohol prep pad
d. Select an appropriately sized sterile syringe and remove the needle protector from the syringe
e. Draw the plunger back drawing in an amount of air equal to the amount of fluid to be removed
f. Using sterile technique, pierce the center of the vial containing the diluting solution with the needle of the syringe
g. Turn the vial upside down and inject the air from the syringe into the vial
h. Taking care to keep the tip of the needle in the diluting solution, withdraw the appropriate amount of fluid from the vial into the syringe
i. Remove the needle from the vial and, using sterile technique, pierce the center of the vial containing the medication to be reconstituted
j. Inject the appropriate amount of diluent into the medication vial
   1) Remove the needle from the vial. Be careful to maintain the sterility of the syringe needle as well as exercising caution to avoid inadvertent needle sticks. If local protocols allow, the needle may be recapped to help preserve sterility. However, once contaminated, the needle **may not** be recapped under any circumstances
   2) Gently shake and roll the vial until all the medication dissolves in the diluting solution

If recapping is allowed, always use one-handed technique

k. Using the same needle and syringe, pierce the stopper of the medication vial and draw out slightly more than the desired amount of reconstituted medication
l. Remove the needle from the vial
m. With the needle of the syringe pointing upward, gently tap the syringe to move any air remaining in the syringe to the top
n. Remove the needle protector and purge any excess air and medication from the syringe
o. The medication is now ready to be delivered

2. Vial and Syringe kits
   a. Inspect the packaging of the vial and syringe to insure they each:
      1) Contain the correct solution or medication
      2) Contain the correct volume and/or concentration
      3) Have not expired
      4) Contain no particulates or discoloration

TEACHING POINTS

5) Have not been contaminated in any manner

b. Remove the protective cap from the medication vial and wipe the rubber stopper with an alcohol prep pad
c. Remove the needle protector from the syringe and insert the needle through the rubber stopper of the medication vial
d. Inject all the diluent from the syringe into the medication vial
e. Remove the diluent syringe from the vial and properly dispose of it in a sharps container
f. Gently shake and roll the vial until all the medication dissolves in the diluting solution
g. Using a syringe and appropriately sized needle, pierce the center of the rubber stopper and withdraw slightly more of the medication than the ordered dose
h. Remove the needle from the vial
i. With the needle of the syringe pointing upward, gently tap the syringe to move any air remaining in the syringe to the top
j. Remove the needle protector and purge any excess air and medication from the syringe
k. The medication is now ready to be delivered

II. MEDICATION ADMINISTRATION SKILLS

A. ORAL/SUBLINGUAL/BUCCAL MEDICATIONS

1. Prepare medication in the fashion previously described in this section
2. Carefully inspect the medication and label to insure it:
   a. Contains the correct medication
   b. Contains the correct dose and concentration
   c. Has not expired
   d. Is not been contaminated in any manner
3. Explain procedure to the patient:
   a. Oral: Swallow the medication with a small amount of water
   b. Chewed: Chew the medication and do not swallow for about 10 seconds
   c. Sublingual: Place the medication under the tongue and do not swallow for 10 seconds
   d. Sublingual spray: Spray on or under the tongue; be careful the patient does not inhale medication

Contact medical control per local protocols

These routes are only used for conscious patients, who are able to swallow

TEACHING POINTS

e. Buccal: Apply medication between patient's cheek and gum; a tongue depressor may be used

4. Give the medication to the patient to take or place medication in the patient's mouth
5. Assure the medication is swallowed, chewed or dissolved
6. Provide an ongoing assessment of your patient to identify any effects of the medication

B. INTRAMUSCULAR INJECTION

1. Prepare an administration device and/or draw up medication in the fashion previously described in this section
2. Carefully inspect the chosen device to insure it:
   a. Contains the correct medication
   b. Contains the correct dose and/or concentration
   c. Has not expired
   d. Contains no particulates or discoloration
   e. Is not cracked, chipped, or contaminated in any manner
   f. Is equipped with a safety needle of sufficient length to provide muscular access
3. Select an injection site
   a. Deltoid
   b. Vastus lateralis
4. Cleanse the injection site with an alcohol prep pad
5. Stabilize the injection site using:
   a. "Pinch" technique
   b. Stretch technique
6. Holding the syringe like a dart, quickly but not forcefully, insert the needle into the injection site at a 90 degree angle until the proper depth is reached
7. Release the skin with one hand while continuing to hold the syringe in place with the other
8. Grasp the plunger with one hand and the barrel of the device with the other. Pull back slightly on the plunger and wait five seconds:
   a. If blood aspirates into the syringe, an alternative site must be chosen
   b. If no blood aspirates into the syringe, proceed with the injection
9. Slowly depress the plunger to administer the injection (10 seconds per mL)
10. Once the medication has been administered, wait ten seconds, then withdraw the needle using appropriate safety features

Contact medical control per local protocols

TEACHING POINTS

11. Cover the injection site with an alcohol or gauze pad and apply gentle pressure to the area to help reduce pain and improve absorption
12. Properly dispose of the syringe and needle assembly in an appropriate sharps container and place a bandage over the injection site
13. Provide an ongoing assessment of your patient to identify any effects of the medication

B. SUBCUTANEOUS INJECTION
1. Prepare an administration device and/or draw up medication in the fashion previously described in this section
2. Carefully inspect the chosen device to insure it:
   a. Contains the correct medication
   b. Contains the correct dose and/or concentration
   c. Has not expired
   d. Contains no particulates or discoloration
   e. Is not cracked, chipped, or contaminated in any manner
   f. Is equipped with a safety needle of sufficient length to provide muscular access
3. Select an injection site
4. Cleanse the injection site with an alcohol prep pad
5. Stabilize the injection site using the “pinch” technique
6. Holding the syringe like a dart, quickly but not forcefully, insert the needle into the injection site at a 45 degree angle until the proper depth is reached
7. Release the skin with one hand while continuing to hold the syringe in place with the other
8. Grasp the plunger with one hand and the barrel of the device with the other. Pull back slightly on the plunger and hold for five seconds:
   a. If blood aspirates into the syringe, an alternative site must be chosen
   b. If no blood aspirates into the syringe, proceed with the injection
9. Slowly depress the plunger to administer the injection
10. Once the medication has been administered, quickly withdraw the needle using any appropriate safety features
11. Cover the injection site with an alcohol or gauze pad and put gentle pressure on the area to help reduce pain and improve absorption
12. Properly dispose of the syringe and needle assembly in an appropriate sharps container and place a bandage over the injection site

TEACHING POINTS

13. Provide an ongoing assessment of your patient to identify any effects of the medication

C. VENOUS ACCESS (Infusion)

1. Prepare an IV administration system as previously described in this section
2. Carefully inspect the system to insure it:
   a. Contains the ordered or appropriate solution
   b. Has not expired
   c. Contains no particulates or discoloration
   d. Has not been contaminated in any manner
   e. Has been properly primed
3. Prepare the necessary equipment and supplies
   a. Sharps container
   b. Tape and/or commercially available device for securing the IV
   c. Disinfectant
      1) Alcohol prep pads
      2) Betadine
   d. Gauze pads
   e. Site dressing
   f. Tourniquet (latex free)
   g. Catheter(s)
4. Select a venipuncture site
5. Apply a venous tourniquet approximately 4 to 8 inches above the selected site
6. Select a vein for cannulation and cleanse the intended venipuncture site with an alcohol prep pad and/or betadine swab
7. Based on the intent of the IV and the size of the vein selected, choose an IV catheter of appropriate size
8. Remove the catheter from its packaging and the protective plastic sheath
9. Being careful to maintain the sterility of the needle and catheter, visually inspect the end of each for any defects, such as burred edges
10. Slightly twist the catheter on the needle to insure the catheter moves freely on the needle
11. Grasp the patient's extremity near the area where the IV will be started using your non-dominant hand
12. Use your non-dominant hand to stabilize the vein at the venipuncture site

If tape is used, it should be torn to appropriate size and length prior to beginning the procedure

Use antiseptics per local protocol

Appropriately engineered safety devices should be used

DO NOT place the thumb directly over the vein to be cannulated. Doing so shuts off the blood supply and causes the vein to collapse. Additionally, the thumb will be in the way of the catheter assembly when cannulating the vein

13. Insure the bevel of the needle is facing upward in relation to the patient's skin
14. Holding the catheter assembly as you would a pool cue, and in such a manner as to be able to visualize the flash chamber, approach the injection site with the needle held at approximately a 15 – 20 degree angle
15. Inform the patient they will feel a slight "pinch" as the needle enters their skin
16. While continuing to apply traction to the skin to hold the vein steady, quickly, but carefully, enter the skin with the needle and continue until the needle tip is against the wall of the vein itself
17. Slowly advance the needle through the vein wall and into the lumen
18. Once you have entered the vein, continue to advance the needle and catheter assembly slightly (1/8 to 1/4 inch) so the tip of the catheter enters the vein
19. When you are certain the catheter is within the lumen of the vein, slowly advance the catheter along the needle until the hub meets the patient's skin
20. After the catheter has been threaded into the vein, withdraw the needle from the catheter, but DO NOT withdraw it completely
21. If blood draws are to be made using the IV catheter, leave the tourniquet in place and obtain blood samples at this time. If no blood draw is to be made, release the tourniquet
22. Palpate the end of the catheter beneath the patient's skin and occlude with direct pressure just proximal to the end of the catheter
23. Remove the needle and activate any safety features before disposing of it in an approved sharps container
24. With your free hand, remove the protective cap from the end of the IV tubing and attach it to the catheter hub, making sure not to push the catheter further in or pull it out
25. Open the IV flow clamp and observe the flow of fluid into the drip chamber
    a. If the IV does not flow:
        1) Insure the tourniquet is not still in place
        2) Carefully withdraw the catheter slightly while observing the drip chamber since the tip may be occluded by a valve or the side of the vein
        3) Determine if the IV is positional and troubleshoot as necessary
    b. With the IV running, and before securing the IV catheter in place, inspect the venipuncture site for signs of infiltration
    c. If an IV can not be made to flow properly or infiltration is observed:
        1) Discontinue the IV immediately
        2) Begin the process anew using another site

TEACHING POINTS

A "pop" may be felt as the needle enters the vein. Consideration may be given to a bevel down approach for pediatric and geriatric patients with small veins

The flash chamber should fill with blood when entering the vein

No more than one-half the length of the catheter should be below the skin at the point the needle enters the vein or only a small portion of the catheter will actually be within the vein for the finished IV

Care must be taken to maintain constant control of the needle (stylette) assembly in that the weight of many of the new safety stylettes is such that it will cause them to fall from the catheter, and perhaps pull the catheter from the vein in doing so

Discuss chevron method versus commercial devices

Discuss "Luer lock" versus "Luer-slip" connections

TEACHING POINTS

Flow rates vary with local protocol

Consideration must be given to maximum and/or ordered quantities of fluids

26. If the IV is observed to flow properly:
    a. Using a gauze pad or alcohol prep pad as necessary, wipe away any fluid or blood that may be present in order to dry the site sufficiently that tape will adhere
    b. Secure the IV and the IV tubing in place; cover insertion site with a sterile dressing or commercially available device
27. Secure the patient's extremity as appropriate to maintain flow
28. Adjust the flow rate by closing flow clamp or other flow-metering device to the appropriate setting
29. Continue to monitor the patient for:
    a. Signs of a fluid overload
    b. Other complications resulting from the IV
    c. Appropriate flow rate
    d. Infiltration
30. Continue to monitor the IV to insure appropriate flow rate is maintained and the venipuncture does not infiltrate

D. CHANGING THE SOLUTION BAG OF AN ESTABLISHED IV

1. Select the appropriate solution
    a. Carefully inspect the solution to insure it:
        1) Contains the correct solution
        2) Contains the correct concentration
        3) Has not expired
        4) Contains no particulates or discoloration
        5) Has not been contaminated in any manner
    b. Open outer packaging by tearing pre-cut slit at either end of the bag
        1) Recheck clarity
           Note: that a slight amount of moisture inside the outer bag is normal and not cause for concern
2. Shut off the flow clamp on the nearly empty IV bag to prevent air from entering the IV tubing as the solution bag is being changed
3. Invert the nearly empty bag to prevent any remaining fluid from running out, and remove the IV tubing spike from the bag
    a. Use extreme care to ensure the IV tubing spike does not touch anything to contaminate the sterile field

TEACHING POINTS

b. Discard the used solution bag after noting the approximate amount of any remaining fluid

4. Spiking the new bag
   a. Method 1
      1) If not previously done, hang the new IV solution bag with the tail ports extending downward
      2) Grasp the IV port just above the plastic tab. With the other hand, pull the plastic tab from the port. Be careful to maintain sterility of the port
      3) Insert the IV tubing spike into the IV port by pushing and twisting the spike until it punctures the seal of the port
      4) Squeeze the drip chamber as necessary to fill it approximately half full of fluid
   b. Method 2
      1) Holding the new IV bag at its base, invert the bag so the tail ports extend upward
      2) While continuing to hold the IV bag, grasp its IV port just below the plastic tab. With the other hand, pull the plastic tab from the port. Be careful to maintain sterility of the port
      3) Insert the IV tubing spike into the IV port by pushing and twisting the spike until it punctures the seal of the port
      4) Invert the bag so it is again in its upright position and squeeze the drip chamber as necessary to fill it approximately half full of fluid
5. Reestablish the IV flow rate

E. DISCONTINUING AN IV
1. Prepare the necessary materials
   a. Gauze square(s)
   b. Tape or bandage
   c. Antiseptic gel
   d. Bio-hazard container
2. Close the flow clamp of the IV administration set
3. Gently remove the tape securing the IV tubing and catheter to expose the venipuncture site
4. Cover the venipuncture site with a gauze square and apply gentle pressure as you remove the IV catheter

TEACHING POINTS

5. Inspect the catheter to insure it is complete, noting any abnormalities
6. Affix an adhesive bandage that will continue to apply pressure until bleeding has stopped
7. Properly dispose of all biohazard materials
8. Monitor venipuncture site for bleeding

F. INTRAVENOUS BOLUS MEDICATIONS (IVP) - Assumes a patent IV is present
1. Prepare an administration device and/or draw up medication in the fashion previously described in this section
   a. Needle system
   b. Needleless system
2. Carefully inspect the chosen device to insure it:
   a. Contains the correct medication
   b. Contains the correct dose and concentration
   c. Has not expired
   d. Contains no particulates or discoloration
   e. Has not been contaminated in any manner
3. Use an alcohol prep pad to wipe the surface of the IV tubing med-port closest to the patient
4. Remove the protective cap from the administration device on the syringe and insert it through, or attach it to, the selected med-port
5. Kink off the IV tubing between the med-port in use and the IV solution bag
6. Inject the medication at the proper rate
7. Following injection of the medication, flush the IV tubing
   a. Bolus flush (IVP)
   b. Open flow
8. Properly dispose of any sharps and/or biohazard material

G. VENOUS ACCESS (Blood Draw) - Vacutainer Method
1. Prepare all necessary equipment and supplies
   a. Vacutainers per local protocols
   b. Multi-sample needle(s) and/or Luer adaptor
   c. Needle/tube holder
   d. Tourniquet (latex free)
   e. Alcohol prep pads

TEACHING POINTS

   f. Betadine swabs per local protocol
   g. Gauze squares
   h. Adhesive bandages
2. Twist the top from the shorter end of the vacutainer needle and thread into the needle holder
3. Select a venipuncture site and apply the venous tourniquet 4 to 8 inches proximal to the site
   a. Typically antecubital
   b. May be drawn off an IV start
4. Select a vein to be cannulated and cleanse the venipuncture site with an alcohol prep pad and/or Betadine per local protocol
5. Remove the protective cover from the vacutainer needle and prepare to cannulate the selected vein
6. Select the blood tube (vacutainer) to be used first in the fill sequence and place it in the tube holder but DO NOT push down on the tube
7. While holding the vacutainer and needle assembly at approximately a 15 - 20 degree angle with the bevel of the needle up, quickly but gently pierce the skin and the vein in a fashion similar to starting an IV
8. As soon as the needle has entered the vein, reduce the angle and thread the needle an additional 1/8 to 1/4 inch further into the vein being careful not to cause the needle to pass through the opposite wall of the vein
9. Continue to hold the vacutainer and needle assembly firmly in place with one hand; with your other hand push the vacutainer tube onto the piercing spike
10. If blood does not immediately begin to flow, reassess the position of the needle and either advance or retract the needle to obtain good flow
11. After the first tube is full, remove the tube by pulling back on it while leaving the needle/tube holder assembly in place. Place and remove additional tubes until all required tubes have been filled
12. When all required tubes are filled, remove the last tube from the holder and release the tourniquet
13. Place a folded 2 x 2 gauze square over the injection site and quickly but gently remove the vacutainer needle assembly from the vein
14. Activate any safety features available in the needle assembly and dispose of the needle and holder in a sharps container

TEACHING POINTS

15. Apply direct pressure to the gauze square until any bleeding has stopped
16. Label all tubes and place in a biohazard container. Labels should include:
    a. Patient's name or identification number
    b. Your name or initials
    c. Date and time
    d. Other pertinent data per local protocols
17. Use tape or a bandage to firmly secure the gauze square in place and continue to apply direct pressure to the venipuncture site

H. VENOUS ACCESS (Blood Draw) - Syringe Method
1. Prepare all necessary equipment and supplies
    a. Vacutainers per local protocols
    b. 20 cc syringe and safety needle
    c. Tourniquet (latex free)
    d. Alcohol prep pads
    e. Betadine swabs per local protocol
    f. Gauze squares
    g. Adhesive bandage
2. Select an appropriately sized safety needle and attach to the syringe to be used to make the draw
3. Select a venipuncture site and apply the venous tourniquet 4 to 8 inches proximal to the site
    a. Typically antecubital
    b. May be drawn off an IV start
4. Select a vein to be cannulated and cleanse the venipuncture site with an alcohol prep pad and/or Betadine per local protocol
5. Remove the protective cover from the syringe needle and prepare to cannulate the selected vein
6. While holding the syringe and needle assembly at approximately a 15 - 20 degree angle with the bevel of the needle up, quickly but gently pierce the skin and the vein in a fashion similar to starting an IV
7. As soon as the needle has entered the vein, reduce the angle and thread the needle an additional 1/8 to 1/4 inch further into the vein being careful not to cause the needle to pass through the opposite wall of the vein

TEACHING POINTS

8. Continue to hold the syringe and needle assembly firmly in place with your other hand gently withdraw the plunger of the syringe
9. If blood does not immediately begin to flow, reassess the position of the needle and either advance or retract the needle to obtain good flow
10. Continue to withdraw the plunger of the syringe until a sufficient amount of blood is withdrawn
11. When an adequate amount of blood has been drawn, release the tourniquet and withdraw the needle and syringe
12. Place a folded 2 x 2 gauze square over the injection site and apply direct pressure to the gauze square until bleeding has stopped
13. While another rescuer, or the patient, continues to apply direct pressure to the venipuncture site, insert the needle of the syringe directly into the center of the first of the blood tubes to be filled
14. Once the tube is full, carefully remove the needle and syringe from the tube and repeat the process with as many other tubes as are to be filled
15. Once all tubes are filled, activate any safety feature(s) of the needle and syringe assembly and discard into a sharps container
16. Label all tubes and place in a biohazard container. Labels should include:
    a. Patient's name or identification number
    b. Your name or initials
    c. Date and time
    d. Other pertinent data per local protocols
17. Use tape or a bandage to firmly secure the gauze square in place and continue to apply direct pressure to the venipuncture site

Excessive syringe vacuum can cause hemolyzing of blood cells

Extreme care must be exercised in managing the sharp once the needle and syringe have been withdrawn from the patient

NEVER attempt to fill blood tubes from a syringe in a moving vehicle

Use a rack or some other device to hold the blood tubes whenever possible

I. METERED DOSE INHALERS

1. Carefully inspect the medication to insure it:
    a. Is a bronchodilator
    b. Contains the correct medication
    c. Contains the correct dose
    d. Has not expired
    e. Has not been contaminated in any manner
2. Verify the inhaler belongs to the patient
3. Shake the inhaler canister vigorously

Contact medical control per local protocols

TEACHING POINTS

4. Remove supplemental oxygen from the patient if needed for the medication administration
5. Explain procedure to the patient:
   a. Forcibly exhale
   b. Place lips around the inhaler
   c. Activate inhaler with deep inhalation
   d. Hold breath as long as comfortably able
6. Replace oxygen and encourage patient to take several deep breaths
7. Repeat steps 4-6 to obtain ordered dosage(s). Wait 1-2 minutes between inhalations
8. Provide an ongoing assessment of your patient to identify any effects of the medication

J. HAND-HELD SMALL VOLUME NEBULIZER

1. Prepare medication in the fashion previously described in this section
2. Carefully inspect the medication to insure it:
   a. Is a bronchodilator
   b. Contains the correct medication
   c. Contains the correct dose
   d. Has not expired
   e. Has not been contaminated in any manner
2. Explain procedure to the patient:
   a. Place lips around the inhaler
   b. Inhale as deep as possible
   c. Hold breath as long as comfortably able, up to 10 seconds
   d. Continue until the medication is gone; there is no misting
4. Remove supplemental oxygen from patient
5. Start nebulizer with oxygen at 6-8 lpm
6. Replace supplemnntal oxygen when the treatment is completed
7. Provide an ongoing assessment of your patient to identify any effects of the medication

Contact medical control per local protocols

As the medication is administered and the level drops in the atomization chamber, the chamber may need to be tapped to deliver all the medication

TEACHING POINTS

SECTION 7 – MANAGEMENT OF SOFT TISSUE INJURIES

OBJECTIVES:

1. To control external bleeding
2. To prevent further injury and reduce pain
3. To prevent further wound contamination and reduce the potential of subsequent infection
4. To secure dressings through the application of appropriate bandaging techniques

GENERAL PRINCIPLES:

1. Use appropriate body substance isolation precautions
2. Expose the wound site to determine the extent of injury
3. Control bleeding by using the following techniques as needed: direct pressure, pressure dressing, elevation, pressure points, cold application and tourniquet
4. Use sterile dressings or the cleanest dressings available
5. Cover the entire wound site with the sterile surface of the dressing
6. Apply bandage snugly, making certain not to cut off circulation distal to injury site
7. Secure the dressing(s) with roller gauze or cravats applying gentle, even pressure over the wound site
8. Use the patient's brow ridge and chin as necessary to provide natural anchoring points for bandaging
9. If the chin is used, monitor the patient carefully for airway problems. Cut bandage and fold flaps up if bandage interferes with airway or causes patient discomfort
10. Immobilize the injury site as appropriate
11. Consider shock and prevent/treat as appropriate
12. CMS should be checked frequently and bandaging adjusted to maintain a pulse if necessary

IMPORTANT POINTS:

1. Always consider the Mechanism of Injury (MOI)
2. Suspect cervical spine injury with major bone or soft tissue injury above the clavicles
3. Do not exert point pressure to scalp if underlying fracture is suspected
4. Do not pack nose or ear to stop blood or CSF flow

TEACHING POINTS

SKILLS:

I. HEAD INJURIES

A. HEAD (side wound)
1. Open dressing to preserve sterile surface
2. Apply sterile surface to wound site and control bleeding
3. Anchor bandage securely under brow and occipital ridges
4. Cover dressing completely with bandage
5. Exert even pressure over entire wound site with finished bandage
6. Leave eyes uncovered; leave ears either completely covered or completely uncovered

B. HEAD (top wound)
1. Open dressing to preserve sterile surface
2. Apply sterile surface to wound site and control bleeding
3. Anchor bandage securely under brow and occipital ridges
4. Bring bandage over dressing and under chin and tighten down over dressing
5. Cover dressing completely and apply even pressure with bandage over area
6. Anchor bandage securely by making additional wraps around head, securing under brow ridge and occipital ridge
7. Cut bandage under chin and fold ends up if it interferes with the airway
8. Make last few turns around brow, overlapping folded section

II. EYE INJURIES

IMPORTANT POINTS:
1. If areas around eye are lacerated but the eyeball is not involved, use direct pressure to control bleeding
2. If eyeball injury is suspected, close eye and apply loose dressing
3. If chemical burn is involved, irrigate eye with normal saline continuously
4. If thermal burns are involved, apply dressing moistened with sterile saline solution
5. If light burns are involved, cover eyes with moist, lightproof pads
6. Cover both eyes when injury occurs as sympathetic eye movement may cause further injury

TEACHING POINTS

7. Never touch the globe or the penetrating object with your hand
8. The finished bandage should hold the eye and/or penetrating object in place
9. Maintain verbal and physical contact with the patient as you explain your actions
10. Always irrigate from the bridge of the nose outward in order to avoid infecting or contaminating the uninjured eye

SKILLS:

A. EYE INJURY – Non-penetrating
   1. Have patient close eyes
   2. Apply sterile surface of dressing to injury(ies)
   3. Secure bandage around head, anchoring under occipital ridge
      a. Bandage snugly if eyeball is uninjured
      b. Bandage loosely if injury to the globe is suspected
   4. Cover both eyes with finished bandage; do not occlude mouth or nose
   5. Restrain patient's hands to keep from touching the eye area as needed

B. EYE INJURY – Penetrating
   1. Surround injured eye with sterile padding
   2. If penetrating object, cut hole in end of cup just large enough for object to pass through
   3. Place cup or cone over eye, resting it on pads, but do not touch the eye
   4. Secure the cup/cone to head with bandage wrapped around cup and then around head anchoring on occipital ridge
   5. Wrap bandage to cover uninjured eye, leaving the nose and mouth exposed
   6. Restrain patient's hands as necessary to prevent patient from touching the bandaged area

Do not cut a hole in dressings or padding as it may leave small particles of fabric in the eye

III. NECK WOUNDS

IMPORTANT POINTS:

1. Control bleeding with direct pressure
2. Use an occlusive dressing to prevent air embolus from being sucked into jugular vein
3. DO NOT use a circumferential bandage around the neck

TEACHING POINTS

SKILL:
1. Place dressing over wound
2. Secure dressing in place by wrapping the bandage over the dressing and over the top of the opposite shoulder, crossing under the axilla and back again to form a figure eight
3. Unless contraindicated, transport patient on left side in moderate Tredelenberg position

IV. INJURIES TO THE TORSO

IMPORTANT POINTS:
1. Chest injuries can be **life threatening** and must be assessed and treated immediately
2. Penetrating objects should be left in place unless they interfere with the patient's ability to breathe or maintain an airway
3. Penetrating objects must be removed if CPR is necessary
4. All open or penetrating injuries to the chest or abdomen must be sealed with an occlusive dressing
5. Large penetrating objects should be shortened to facilitate transport or provide stabilization
6. Control bleeding with direct pressure around organs, never on top of them
7. Look for multiple entry/exit wounds with any form of penetrating trauma
8. Use sterile solution soaked dressings on protruding organs
9. Administer high flow oxygen and assist ventilations as appropriate
10. Transport patients rapidly to the closest appropriate medical facility
11. Consider ALS intercept early where available

SKILLS:

A. OPEN CHEST INJURIES

Use C-spine stabilization as appropriate

1. Immediately apply manual pressure to seal wound after patient forcibly exhales
2. Apply and secure an occlusive dressing
3. Auscultate for breath sounds
4. Turn patient on injured side, if possible, or position of comfort
5. Closely monitor patient for signs of deterioration

B. PENETRATING OBJECT

1. Stabilize object with hand(s)
2. If in chest or upper abdomen, apply occlusive dressing surrounding the base of the object

TEACHING POINTS

3. Stack bulky dressings in alternating layers to stabilize object from all sides
4. Secure dressings with bandage to control bleeding and immobilize the object
5. Restrain patient's hands as necessary to prevent patient from removing object
6. Transport rapidly in position of comfort

C. ABDOMINAL EVISCERATION

1. Cover exposed or protruding organs with a sterile dressing moistened with sterile saline
2. Cover with occlusive dressing to prevent moisture loss
3. Cover with bulky dressings to preserve body warmth
4. Secure dressings loosely in place
5. Transport patient in supine or lateral recumbent position with knees flexed

D. SHOULDER WOUND

IMPORTANT POINTS:

1. May be accompanied by fractures or dislocations
2. Suspect C-spine injury with significant MOI

SKILL:

1. Apply sterile dressing to wound and control bleeding with direct pressure
2. Check CMS distal to injury
3. Position forearm flexed across chest and bring upper arm along line of body
4. Wrap bandage around body, covering wounded arm and crossing under arm on the uninjured side to secure dressing
5. Recheck CMS distal to injury

CMS checks should be made after any bandaging, splinting or repositioning

E. AXILLARY WOUND

IMPORTANT POINTS:

1. Dressing of axillary wounds can easily impair circulation. Check CMS often

SKILL:

1. Apply sterile surface of dressing to wound and control bleeding with direct pressure
2. Check CMS distal to injury

TEACHING POINTS

3. Add dressings over the first to achieve bulk as necessary
4. Bandage around injured armpit and shoulder
5. Position forearm flexed across chest, hand pointing toward opposite shoulder. Recheck CMS
6. Wrap bandage around body, over outside surface of arm on injured side and under opposite shoulder
7. Recheck CMS distal to injury, record and report status periodically
8. If pulse is absent, rebandage as necessary to regain pulse

F. EXTERNAL GENITALIA

IMPORTANT POINTS:
1. Preserve the patient's privacy
2. Expose genitalia only if wound is suspected

SKILL:
1. Apply sterile dressing to wound site and control bleeding
2. Secure the dressing by running a bandage over dressing, between legs and around pelvis. Injury may also be indicative of a pelvic injury

V. EXTREMITY INJURIES

IMPORTANT POINTS:
1. Remove patient's jewelry from the affected extremity
2. Elevate extremity to reduce pain and control bleeding, if circulation is present
3. Leave digits exposed whenever possible

SKILLS:

A. HAND INJURIES

1. Check CMS
2. Apply sterile surface of dressing to wound and control bleeding
3. Place bandage roll or dressing in palm of hand to maintain position of function
4. Anchor bandage around wrist
5. Wrap hand to prevent release from position of function — Leave fingertips exposed to check CMS
6. Achieve some restriction of wrist joint movement with bandage

TEACHING POINTS

7. Place hand in elevated position
8. Recheck CMS distal to injury
9. If circulation is absent, rebandage as necessary to regain pulse

B. TRAUMATIC AMPUTATION/AVULSION

IMPORTANT POINTS:
1. Save all amputated or avulsed parts. Transport with patient whenever possible
2. Wrap in a sterile or clean dressing
3. Protect in watertight container
4. Keep part(s) cool during transport, but do not allow to freeze

SKILL:
1. Apply sterile dressing to wound and control bleeding with direct pressure
2. Wrap bandage around circumference of extremity and pass bandage several times across end of stump to achieve pressure over bleeding area, then secure with several additional circumferential turns
3. Keep stump elevated, if possible
4. If partially attached:
   a. Fold skin flap back over wound
   b. Secure with sufficient pressure to control bleeding
   c. Keep partial amputation cool

VI. BURNS

IMPORTANT POINTS:
1. Make certain the scene is safe to enter
2. Always take appropriate hazard precautions as well as body substance isolation precautions
3. Burns involving the hands, feet, face or genitalia should be considered critical burns
4. Any burns associated with respiratory injuries are critical injuries
5. Burn patients are especially susceptible to shock (hypoperfusion) and hypothermia. They should therefore be treated appropriately

TEACHING POINTS

6. Care must be taken to minimize the potential for infection when dealing with burn patients
7. **Never** use any type of ointment, lotion or antiseptic
8. **Never** break blisters

SKILLS:

A. THERMAL BURNS

1. Stop the burning process as rapidly as possible using water or saline
2. Remove jewelry and any easily removable clothing or debris from the affected area
3. Continually monitor the airway and breathing for signs of airway impairment or respiratory distress
4. Prevent further contamination of the burned area
5. Cover the wound with a clean and dry dressing
6. Treat for shock
7. Transport

Avoid dressings that may leave fragments in burn injuries

B. ELECTRICAL BURNS

1. **DO NOT attempt to remove a patient from the electrical source unless trained to do so**
2. **DO NOT** touch a patient unless you are certain s/he is no longer in contact with the electrical source
3. Stop the burning process as rapidly as possible using water or saline
4. Remove jewelry, and any easily removable clothing, or debris from the affected area
5. Continually monitor the airway and breathing for signs of airway impairment or respiratory distress
6. Prevent further contamination of the burned area
7. Treat any soft tissue injuries or fractures associated with the burn. Look for multiple entry/exit wounds
8. Cover any exposed burned area with a dry, sterile dressing
9. Treat for shock
10. Transport

TEACHING POINTS

C. CHEMICAL BURN
1. Always consider the potential impact of hazardous materials. Patient(s) should not be transported until primary decontamination is completed
2. Brush dry powders off prior to flushing
3. Remove jewelry and any easily removable clothing or debris from the affected area
4. Flush the affected areas with large quantities of water or saline
5. Continue flushing the contaminated area(s) during transport
6. Do not contaminate uninjured or unaffected areas while flushing
7. Continually monitor the airway and breathing for signs of airway impairment or respiratory distress
8. Prevent further contamination of the burned area
9. Treat any soft tissue injuries associated with the burn
10. Treat for shock
11. Transport

TEACHING POINTS

SECTION 8 – PNEUMATIC ANTI-SHOCK GARMENT

OBJECTIVES:

1. To define the indications and contraindications for the use of the pneumatic anti-shock garment
2. To define the manner in which the PASG can be used to stabilize suspected pelvic fractures and apply circumferential pressure to suspected intra-abdominal bleeding accompanied by signs of shock (hypoperfusion)

IMPORTANT POINTS:

1. PASG may be applied without inflation to any patient having the potential to develop shock. A systolic blood pressure of 90 mm HG or less, associated with signs and symptoms is generally regarded as a prime indicator for inflation. However, protocols vary
2. Inflate the PASG based on protocol
3. The only absolute contraindication to inflation is pulmonary edema
4. There are relative contraindications to inflation of all three compartments
5. Inflation should be only to a level at which shock symptoms subside. Careful and frequent monitoring of the vital signs after inflation is essential
6. Do not deflate in the field unless ordered to do so by medical control

NOTE: Extreme circumstances may arise when the PASG may be deflated in the field, but only under authority of Medical Control. (Field deflation is not a generally accepted practice)

SKILL:

A. INFLATION

1. Assess patient for and record signs/symptoms of shock. If spinal injury is suspected, maintain spinal stabilization
2. Determine and record the patient's blood pressure
3. Leave deflated blood pressure cuff in place on patient
4. Auscultate breath sounds — Check for wet or dry breath sounds
5. Remove clothing from patient's abdomen and lower extremities
6. Assess patient's abdomen, pelvis and lower extremities for wounds or fractures. Record findings
7. Cover any open wounds with sterile dressings and bandage in place
8. Restore alignment of extremity fractures, if possible

TEACHING POINTS

9. Contact medical control, if required by local protocol, for permission to inflate garment. If medical control contact is not required, proceed according to local protocol
10. Open and arrange anti-shock garment
11. Apply anti-shock garment
    a. Method One:
        1) Lift patient's lower extremities and buttocks, sliding the garment beneath the patient
        2) If spine injury is suspected, use orthopedic stretcher, log roll or straddle slide to position patient
    b. Method Two:
        1) Loosely secure all three compartments
        2) One rescuer puts pants over his/her arms from the foot end and grasps the patient's ankles
        3) Other rescuers pull garment onto patient like a pair of trousers
12. Verify that the superior edge of the garment is just inferior to the patient's costal margin
13. Secure garment – legs then abdomen
14. Attach inflation pump lines to garment and open all in-line valves
15. Inflate garment until:
    a. Patient's clinical status improves satisfactorily, or
    b. Velcro fasteners begin to crackle, indicating separation, or
    c. Air escapes from relief valve(s)
16. Close all in-line valves
17. Leave inflation pump attached to garment during movement and transport
18. Reassess and record, immediately and at frequent intervals en route to the hospital, the patient's:
    a. Blood pressure
    b. Pulse rate
    c. Respiratory status
    d. Level of consciousness

Open all in-line valves on garment except if ordered otherwise by medical control or in cases in which protocol indicates that a specific compartment is not to be inflated

Monitor respiratory status during inflation. Stop inflation if respiratory distress worsens

TEACHING POINTS

B. PASG DEFLATION PROCEDURE
NOTE: Extreme circumstances may arise when the PASG may be deflated in the field, but only under authority of Medical Control. (Field deflation is not a generally accepted practice)

IMPORTANT POINTS:
1. Deflate the PASG only on the order of a physician who has examined the patient in the emergency department
2. Deflate only after appropriate resuscitative and stabilization measures have been accomplished
3. Deflate only with direct physician supervision

SKILL:
1. Assure the patient has functioning IV lines
2. Assess and record the patient's vital signs
3. Gradually deflate the abdominal section of the garment
   a. Monitor blood pressure carefully
   b. For each 4 - 6 mm Hg drop in the patient's blood pressure, stop deflation and infuse fluids until stabilized at baseline level
   c. If blood pressure continues to drop despite infusion, reinflate garment and reassess resuscitation
4. After abdominal deflation, gradually deflate each leg segment while monitoring blood pressure and resuscitating as above
5. If blood pressure cannot be stabilized during deflation, garment inflation will be maintained into the surgical setting
6. Following deflation of the garment, blood gases and electrolytes will be assessed and corrected as necessary

TEACHING POINTS

SECTION 9 – MUSCULOSKELETAL INJURIES

OBJECTIVES:
1. To immobilize broken and/or displaced bone ends by adequate immobilization of skeletal structure distal and proximal to the injury site
2. To restore normal anatomical alignment of fractures of long bones through the application of manual stabilization and appropriate splinting techniques
3. To determine the presence or absence of circulation, movement and sensation distal to the fracture site
4. To restore normal circulation distal to injury sites whenever possible and appropriate
5. To reduce the potential of further injury to nerves, blood vessels and soft tissue surrounding the injury site
6. To reduce hemorrhage and pain at the injury site and thereby reduce and/or minimize the potential of injury related shock

I. THORACIC INJURIES

IMPORTANT POINTS:
1. Provide oxygen and assist ventilations as necessary
2. Monitor patient closely for signs and symptoms of a pneumothorax
3. Stabilize chest wall injuries at the patient's maximum point of exhalation
4. In injuries involving the shoulder girdle, it is important to immobilize the entire shoulder girdle
5. Immobilize in position found, or position where pulse is regained

SKILL:

A. RIB INJURIES
   1. Position forearm of injured side across chest, hand slightly elevated toward opposite shoulder and secure with roller bandage or sling and swathe
   2. If using a sling and swathe, place triangular bandage under and over arm with point at elbow and two ends tied around patient's neck. Knot should be to the side of the neck
   3. Pin or tie end to form cup to support elbow
   4. Transport in sitting or semi-sitting position, if patient's condition allows

Encourage and facilitate deep breathing

TEACHING POINTS

B. FLAIL CHEST
1. Immediately apply manual stabilization of the flail segment — Be alert to the possibility of a spinal injury
2. Secure the flail segment with a bulky dressing
3. Place patient in the supine position or on injured side while maintaining spinal immobilization as appropriate
4. Provide oxygen and assist ventilations as necessary — Reassess frequently for possible pneumothorax or tension pneumothorax

C. SHOULDER INJURIES
1. Assess and record circulation, movement and sensation distal to the injury. If a pulse is absent, make one attempt to gently reposition to regain a distal pulse
2. Splint the arm and shoulder in position found, or the position where a distal pulse is regained. Pad void between arm and chest as appropriate
3. Assess and record circulation, movement and sensation in arm frequently
4. Wrap wide bandage around injured arm and body to serve as a swathe to pull shoulder back and secure injured arm to body

D. COLLAR BONE (Clavicle)
1. Sling and Swathe method
   a. Assess and record circulation, movement and sensation in the extremity on the injured side
   b. Position the forearm of the injured side across the chest, hand slightly elevated toward opposite shoulder
   c. Place triangular bandage under and over arm with point at elbow and ends tied around neck — Knot should be placed at side of neck
   d. Pin or tie pointed end to form a cup to support elbow
   e. Leave fingers exposed to facilitate circulation check
   f. Wrap wide bandage around injured arm and body as swathe to pull injured shoulder back and secure extremity to body
   g. Assess and record circulation, movement and sensation in extremity on injured side frequently. Loosen splint as necessary to maintain circulation
   h. Transport in sitting or semi-sitting position, if patient's condition permits

TEACHING POINTS

2. Figure of Eight technique
   a. Assess and record circulation, movement and sensation in the extremity on the injured side
   b. Begin bandage on top of injured shoulder and carry diagonally downward across shoulder blades to opposite armpit
   c. Continue through and around armpit, over shoulder and down across shoulder blades to armpit on injured side
   d. Proceed through armpit and up, over shoulder, to starting point
   e. Repeat procedure for three or more additional turns, overlapping the preceding turn by one-third its width
   f. Hold shoulders up and back with finished bandage, immobilizing fracture
   g. Assess and record circulation, movement and sensation in extremity on injured side frequently. Loosen splint as necessary to maintain circulation
   h. Transport in sitting or semi-sitting position, if patient's condition permits

E. SHOULDER BLADE (Scapula)
1. Assess and record circulation, movement and sensation in the extremity on the injured side
2. Immobilize with sling and swathe as for clavicle fracture
3. Assess and record circulation, movement and sensation in extremity on injured side frequently. Loosen splint as necessary to maintain circulation
4. Transport in sitting or semi-sitting position, if patient's condition permits

II. EXTREMITY INJURIES

IMPORTANT POINTS: (Upper extremities)
1. Maintain manual stabilization of the extremity until the splinting process is complete
2. Straighten severely angulated fractures unless resistance is felt
3. If an open fracture with exposed bones ends exists, do not try to replace the bone ends in the wound
4. Injuries involving joints should be immobilized in the position found
5. Make one attempt to restore circulation distal to an injury site
6. Avoid applying pressure to the injury site whenever possible
7. Remove jewelry from injured extremities, place hands in position of function

TEACHING POINTS

SKILLS:

A. ARM (Humerus)

1. Cover any open wound with a sterile dressing and control bleeding, supporting the injury site during procedure
2. Assess and record circulation, movement and sensation in the injured extremity distal to fracture site
3. First EMT will straighten any severe angulation with gentle longitudinal traction above and below the fracture site and will maintain this manual stabilization until the splint is applied and fixed in place by the second EMT
4. Place a padded rigid splint on the lateral aspect of the arm to maintain alignment and secure the bandage
5. Apply wrist sling and swathe to the injured arm to hold the arm in place, elevate the hand and immobilize the shoulder
6. Assess and record circulation, movement and sensation distal to the fracture site frequently. Loosen splint as necessary to maintain circulation
7. Transport patient in sitting or semi-sitting position, as patient's condition permits

Use of a rigid splint is a mandatory component in splinting an upper arm fracture

Slings should support the hand and wrist, but should not encompass the elbow

B. ELBOW

1. Cover any open wound with a sterile dressing and control bleeding: support fracture/dislocation during procedure
2. Assess and record circulation, movement and sensation in the injured extremity distal to injury site
3. Do not straighten angulation, except a single attempt may be made to regain a pulse; immobilize in the position found, or position in which a pulse has been regained
4. Immobilize elbow joint, upper arm and forearm with splint
5. Assess and record circulation, movement and sensation distal to the injury site frequently. Loosen splint as necessary to maintain circulation

TEACHING POINTS

C. FOREARM (Radius and Ulna)
Rigid Splint:

1. Cover any open wound with a sterile dressing and control bleeding: support fracture during procedure
2. Assess and record circulation, movement and sensation in the injured extremity distal to fracture site
3. First EMT will straighten any severe angulation with gentle longitudinal traction above and below the fracture site and will maintain this manual stabilization until the splint is applied and fixed in place by the second EMT
4. Place a padded rigid splint on the entire anterior aspect of the forearm to maintain alignment and secure the bandage
5. Place bandage roll in palm of hand and splint to maintain position of function
6. Wrap splint and forearm with bandage leaving finger tips exposed
7. Apply sling and swathe to keep elbow immobilized and hand pointing slightly upward toward opposite shoulder
8. Assess and record circulation, movement and sensation distal to the injury site frequently. Loosen splint as necessary to maintain circulation
9. Transport patient in sitting or semi-sitting position, as patient's condition permits

D. WRIST

1. Cover any open wound with a sterile dressing and control bleeding: support fracture during procedure
2. Assess and record circulation, movement and sensation in the injured extremity distal to fracture site
3. Remove any jewelry from injured hand, if possible
4. Immobilize wrist with hand in position of function
5. Assess and record circulation, movement and sensation distal to the injury site frequently. Loosen splint as necessary to maintain circulation

E. HAND INJURIES

1. Cover any open wound with a sterile dressing and control bleeding, supporting the injury site during procedure
2. Assess and record circulation, movement and sensation in the injured extremity distal to fracture site

TEACHING POINTS

3. Remove jewelry from injured hand, if possible
4. Immobilize hand in position of function by placing bandage roll in palm
5. Apply splint-leaving fingertips exposed
6. Keep hand elevated
7. Assess and record circulation, movement and sensation distal to the injury site frequently. Loosen splint as necessary to maintain circulation

Commercial Splints – For forearm, wrist and hand, follow manufacturer's recommendations

IMPORTANT POINTS: (Lower Extremities)

1. Maintain manual stabilization of the extremity until the splinting process is complete
2. Straighten severely angulated fractures not involving a joint unless resistance is felt. Splint hip injuries in place or where distal circulation is restored
3. If an open fracture with exposed bones ends exists, do not try to replace the bone ends in the wound
4. Watch for the development of hypovolemic shock due to internal hemorrhage associated with pelvic, hip and femur fractures

Place PASG on long spinal immobilization device before positioning patient

Do not log roll patient when moving to a rigid support device

F. PELVIC INJURIES

1. Assess patient for signs of shock; Pneumatic Anti-Shock Garment (PASG) may be indicated
2. Assess and record distal circulation, movement and sensation in both lower extremities
3. Immobilize legs by tying knees and ankles together with bandages, padding between thighs and knees, unless this increases patient's pain
4. Lift and/or slide the patient as a unit on to a long spinal immobilization device or use orthopedic stretcher. DO NOT log roll patient
5. Flex the patient's knees with pillows underneath for comfort, if possible, and secure patient to long spineboard or orthopedic stretcher
6. Closely monitor patient for signs of shock and internal injury. Assess and record circulation, movement and sensation in lower extremities frequently

PASG may be used as a splinting device. Contact medical control for approval

Patient is a priority transport

TEACHING POINTS

G. HIP INJURIES
1. Assess and record circulation, movement and sensation in both lower extremities; if pulse is absent, one attempt to regain a pulse with gentle longitudinal traction may be made subject to local protocol
2. Lift and/or slide the patient as a unit onto a long spinal immobilization device or use an orthopedic stretcher. DO NOT log roll patient
3. Support the extremity in the position found using blankets, pillows or similar materials. Do not attempt to straighten deformities
4. Secure the patient to the long spinal immobilization device
5. Assess and record circulation, movement and sensation distal to the injury site frequently

H. THIGH INJURIES (Femur)
TRACTION SPLINT (Hare style)
First EMT:
1. Take position at injured extremity out of the way of person applying splint
2. Remove the patient's footwear
3. Assess and record circulation, movement and sensation distal to fracture site
4. The ankle hitch may be applied at this time
5. Grasp and support the calf with one hand. With the other hand, grasp ankle, or ankle hitch strap, in preparation for lifting
6. Apply gentle longitudinal traction sufficient to stabilize the injured thigh until traction can be assumed by splint

Second EMT:
1. Cover any open wound with a sterile dressing and control bleeding
2. Adjust the length of the splint by measuring against the length of the uninjured leg and lock securely in place
3. Position leg support straps on splint with two proximal to the knee, one distal to the knee and one just proximal to the ankle hitch
4. Release traction mechanism and extend traction strap
5. Position splint under injured extremity
6. Extend or attach heel stand to support splint
7. Verify the ischial pad is firmly against the ischial tuberocity
8. Firmly secure groin strap using care not to pinch the external genitalia

TEACHING POINTS

9. If not previously applied, apply ankle hitch to patient's ankle so as to maintain foot at right angle to leg when traction is applied
10. Attach traction mechanism to ankle hitch
11. Tighten traction mechanism until:
    a. First EMT reports mechanical traction equals manual traction
    b. Patient acknowledges pain relief
12. Readjust leg support straps if necessary with two proximal to the knee, one distal to the knee and one proximal to the ankle hitch
13. Secure leg support straps
14. Reassess and record circulation, movement and sensation distal to fracture site frequently
15. Secure patient and splint to long spinal immobilization device

TRACTION SPLINT (Sager style)

1. Remove the patient's footwear
2. Assess and record circulation, movement and sensation distal to fracture site
3. Cover any open wound with a sterile dressing and control bleeding
4. Adjust length of splint
5. Slide groin strap under injured leg. NOTE: Splint may be applied to either the lateral or medical aspect of the leg
6. Secure the groin strap using sufficient padding to insure patient comfort
7. Estimate the size of the ankle and fold down the number of pads needed
8. Apply the ankle harness snugly around the patient's ankle
9. Extend the inner shaft of the splint by holding the shaft lock in the open position and pulling the inner shaft out until the desired amount of traction, per manufacturer's recommendations, is noted on the calibrated wheel
10. Apply the longest strap as high up on the thigh as possible
11. Apply the second longest strap as low as possible on the thigh
12. Apply the shortest strap over the ankle harness and lower leg
13. Apply figure eight strap around both ankles by slipping the strap under the ankles. Cross strap over the heel and secure buckle snugly

TEACHING POINTS

TRACTION SPLINT (Kendrick Traction Device)

1. Remove the patient's footwear
2. Assess and record circulation, movement and sensation distal to fracture site
3. Cover any open wound with a sterile dressing and control bleeding
4. Apply ankle hitch tightly around the leg, slightly above the ankle
5. Tighten stirrup by pulling the green tabbed strap, until snug under patient's heel
6. Apply upper thigh system by sliding the pronged portion of buckle under the leg, at the knee, and seesaw upward until positioned in groin area. Secure buckle
7. Cinch the groin strap until traction pole receptacle is positioned in line with the iliac crest
8. Extend the traction pole
9. Place traction pole along the lateral aspect of the injured leg, extending approximately eight (8) inches (one pole section) beyond the bottom of the foot
10. Insert pole end(s) into traction pole receptacle
11. Secure yellow elastic strap around knee
12. Place yellow tab end of blue cinch strap (located on ankle hitch) over the dart end of traction pole
13. Apply traction by pulling the red tab end of cinch strap until patient comfort improves
14. Apply upper (red) elastic strap and lower (green) elastic strap around patient's leg and traction pole

I. KNEE INJURIES

1. Cover any open wound with a sterile dressing and control bleeding, supporting the injury site during process
2. Assess and record circulation, movement and sensation distal to injury
   a. DO NOT attempt to straighten any angulation of the knee joint
   b. ONE attempt may be made to manipulate the knee slightly to regain a distal pulse, if absent
3. Splint the knee in the position found, or the position in which a pulse was regained
4. Assess and record circulation, movement and sensation distal to injury frequently. Loosen splint as necessary to maintain circulation

TEACHING POINTS

J. LEG INJURIES (Tibia and/or Fibula)
Rigid Splint

1. Cover any open wound with a sterile dressing and control bleeding supporting the injury site during process
2. Assess and record circulation, movement and sensation distal to injury
3. First EMT will make one gentle attempt to straighten any severe angulation by stabilization and support above and below the fracture site. Stabilization and support will be maintained until assumed by splinting device
4. Second EMT applies two well padded rigid splints, one medial and one lateral, to the leg; or one padded splint against the posterior aspect of the leg, reaching from well above the knee to below the ankle
5. Secure the splint(s) in place with bandages to immobilize the knee and ankle
6. Assess and record circulation, movement and sensation distal to fracture site frequently. Loosen splint as necessary to maintain circulation

K. ANKLE AND FOOT INJURIES

1. Gently remove footwear for examination
2. Cover any open wound with sterile dressings and control bleeding, supporting the injury site during process
3. Assess and record circulation, movement and sensation distal to injury
4. Select and apply pillow, blanket, or appropriate commercial splinting device, leaving toes exposed
5. Elevate foot and ankle to reduce edema
6. Assess and record circulation, movement and sensation frequently. Loosen splint as necessary to maintain circulation

Commercial Splints - Follow manufacturer's recommendations

TEACHING POINTS

SECTION 10 – SPINAL INJURIES

OBJECTIVES:

1. To provide initial manual stabilization to the entire spinal column and head to facilitate a patent airway
2. To restore and maintain normal anatomical alignment of the spinal column and head through application of manual stabilization until appropriate stabilization and immobilization is assumed by a mechanical device
3. To provide total immobilization of the entire spinal column and head through the proper positioning and securing of a spinal injury or suspected spinal injury patient to a mechanical movement/stabilization device
4. To provide stabilization and immobilization of the spinal column and head from the time at which manual stabilization is first initiated and neutral positioning achieved through all patient handling, packaging and transport procedures

IMPORTANT POINTS:

1. One EMT is responsible for stabilization of the head, neck and maintenance of the airway
2. Restoring spinal alignment may be appropriate during the spinal stabilization and immobilization process. However, if resistance to movement of the neck or spine is felt, or the patient experiences an increase in pain, stabilize the patient in the position found
3. In general, a cervical collar should be used during the stabilization/immobilization process. A cervical collar itself is not adequate for protecting the cervical spine
4. Stabilization and immobilization are the only adequate protection for suspected spinal injuries
5. Once immobilization has been completed, the device may be positioned to assist in maintaining a patent airway
6. Patients may be immobilized to a long or short immobilization device using straps, tape, cravats, velcro closures, commercial devices, etc. Appropriate padding such as blankets, towels, dressings, etc, may be needed to prevent movement of the patient in or on the immobilization device

TEACHING POINTS

SKILLS:

I. SPINAL INJURIES

A. KENDRICK EXTRICATION DEVICE (KED)

First EMT

1. Stabilize and support the head in a neutral position
2. Maintain stabilization until patient's head is secured to KED

Second EMT

1. Assist in repositioning the patient's body to a neutral position, as necessary
2. Assess and record circulation, movement and sensation in all four extremities
3. Select and apply an appropriately sized cervical collar
4. Prepare and position KED behind patient (Request additional help in positioning patient if necessary)
5. Secure KED with center and bottom chest straps. Assure firm contact of device with lower back and armpits
6. Pad any void between patient's head and the device to preserve neutral alignment as is necessary
7. Secure head to device; first strap over forehead, second strap over chin
   NOTE: The chin strap may be omitted or removed if airway compromise exists
8. First EMT may now release manual stabilization

It is permissible for rescuers to exchange positions while providing immobilization

Depending on the style of C-collar in use, the chinstrap may be more appropriately placed on the C-collar below the chin

Both EMTs

1. Secure groin and top chest straps
2. Secure hands and lower extremities
3. Position long immobilization device adjacent to patient
4. Slide and pivot patient; support patient at thighs and with device handles
5. Lower patient to long immobilization device; maintain legs in flexed position
6. Move patient to head of long immobilization device
7. Release groin straps and lower the patient's legs to the long immobilization device. Loosen top chest strap as necessary to facilitate breathing and patient comfort
8. Secure patient to long immobilization device at chest, pelvis, thighs, and below knees, padding as necessary
9. Reassess and record circulation, movement and sensation in all four extremities

Groin strap must be properly positioned under the mid-line of each buttock to properly secure device to patient

Reassess head, strap placement and tension

TEACHING POINTS

B. SPINAL INJURY – XP-ONE (XP-1) (Optional)

First EMT

1. Stabilize and support the head in a neutral position
2. Maintain stabilization until patient's head is secured to XP-1

Second EMT

1. Assist in repositioning the patient's body to a neutral position, as necessary
2. Assess and record circulation, movement and sensation in all four extremities
3. Apply Med-Spec extrication collar
4. Prepare and position XP-1 behind patient (Request additional help in positioning patient if necessary)
5. Secure XP-1 with center and bottom chest straps. Assure firm contact of device with lower back and armpits
6. Secure head to device, choose appropriate tabs and attach them to the velcro on both sides of the collar. Place forehead pad on patient and attach tabs

It is permissible for rescuers to exchange positions while providing immobilization

Both EMTs

1. Secure groin straps
2. Apply top chest strap; draw shoulder straps down, loop Velcro around top on top and middle chest straps and secure in place
3. Position long immobilization device adjacent to patient
4. Slide and pivot patient; support patient at thighs and with device handles
5. Lower patient to long immobilization device; maintain legs in flexed position
6. Move patient to head of long immobilization device
7. Release groin straps and lower the patient's legs to the long immobilization device. Loosen top chest strap as necessary to facilitate breathing and patient comfort
8. Remove chin strap, if needed, to assure an airway
9. Secure patient to long immobilization device at chest, pelvis, thighs, and below knees, padding as necessary
10. Reassess and record circulation, movement and sensation in all four extremities

TEACHING POINTS

C. LONG SPINEBOARD - Standing Patient

IMPORTANT POINTS:

1. A standing patient with a potential spinal injury must be moved to a supine position as soon as possible
2. Manual stabilization of the patient's head and neck can be maintained from either the front or the back of the patient depending on the rescuer's height. Shorter rescuers may need to stabilize from the front of the patient
3. While holding manual stabilization from the rear, communicate with team members as your view of the patient will be obstructed by the immobilization device

SKILL:

1. Maintain manual stabilization of the patient's head, neck and spine
2. Assess and record circulation, movement and sensation in all four extremities
3. Select and apply a cervical collar
4. Position the long spinal immobilization device behind the patient being certain it is centered directly behind the mid-line of the patient
5. Two rescuers face the patient and stand on either side
6. The two rescuers place their arms that are closest to the patient, under the patient's arms and grasp the device just above the patient's armpit
7. The two rescuers, with their free hand, grasp the patient's arm at the elbow or the board to maintain a secure grip as the device is tilted backward
8. The device is then tilted backward to the ground
9. The patient's torso and lower extremities are secured to the device, followed by the patient's head, padding as necessary to maintain neutral alignment
10. Reassess and record circulation, movement and sensation in all four extremities

D. SLING AND LONG SPINEBOARD

First EMT

1. Stabilize and support the head in a neutral position

Second EMT

1. Select and apply an appropriately sized cervical collar
2. Assess and record circulation, movement and sensation in all four extremities
3. Position sling across chest and under armpits of patient and tighten around body

TEACHING POINTS

4. Secure patient's hands together if possible
5. Position long spineboard at slight elevation to patient's longitudinal axis. Support at this angle while pulling patient
6. On command, pull patient slowly onto board keeping sling close to board at all times as First EMT guides patient's body and maintains stabilization of the head
7. As First EMT approaches head of board, lower board gently and move back as pull is completed
8. Secure patient to long immobilization device at chest, pelvis, thighs, and below knees, padding as necessary
9. Secure patient's head to long spineboard, padding as necessary
10. First EMT may then release manual stabilization
11. Reassess and record circulation, movement and sensation in all four extremities

E. LOG ROLL AND LONG IMMOBILIZATION DEVICE (Patient Supine – 3 Rescuers)

First EMT

1. Stabilize and support the head in a neutral position
2. Maintain stabilization until patient's head is secured to long immobilization device

Second and Third EMTs

1. Select and apply an appropriately sized cervical
2. Assess and record circulation, movement and sensation in all four extremities
3. Secure patients extremities
4. Take position along side patient's side, all kneeling
5. Second EMT raises patient's near arm over patient's head to prevent arm from obstructing roll, or places arm along patient's side with hand against thigh
6. Second and Third EMTs reach across patient and place their hands along patient's body evenly spaced between shoulder and knees — Hand spacing may be adjusted to accommodate patient's weight and height
7. On signal from first EMT, second and third EMTs roll patient toward them, maintaining spinal alignment
8. Second and third EMTs each use hand closest to patient's feet to position the long immobilization device on the floor next to the patient's back
9. On signal from first EMT, all roll the patient back onto long immobilization device and lower arm to side
10. If centering of the patient is necessary; on signal from first EMT, slide patient with gentle even motion while maintaining spinal alignment

	TEACHING POINTS
11. Third EMT secure patient to long immobilization device at chest, pelvis, thighs, and below knees, padding as necessary	The patient may be centered through the use of either direct lateral movement or the "Z" method, which combines longitudinal and lateral movement
12. Second EMT secures patient's head to long immobilization device, padding as necessary to maintain neutral alignment	
13. First EMT may then release manual stabilization	
14. Reassess and record circulation, movement and sensation in all four extremities	

F. LOG ROLL AND LONG IMMOBILIZATION DEVICE (Patient Prone or on side – 3 Rescuers)

First EMT

1. Stabilize head, neck and spine in position found

Second and Third EMTs

1. Assess and record circulation, movement and sensation in all four extremities	
2. Secure patient's lower extremities together	
3. Place long spinal immobilization device parallel to the patient so the back of the patient's head is next to the board	
4. Both rescuers kneel on board facing the patient with second EMT at the patient's chest and third EMT at the patient's thighs	
5. Second EMT raises patient's arm nearest the device and positions it over the patient's head or along side the patient's body with the hand against the thigh	
6. Second and Third EMTs reach across patient and place their hands along patient's body evenly spaced between shoulder and knees	Hand spacing may be adjusted to accommodate patient's weight and height
7. On signal from First EMT, second and third EMTs roll patient toward them onto long immobilization device	
8. As patient is rolled, First EMT brings head into neutral position, if possible, achieving spinal alignment (If resistance is felt, head is stabilized at that point)	
9. If centering of the patient is necessary; on signal from First EMT, slide patient with gentle even motion while maintaining spinal alignment	The patient may be centered through the use of either direct lateral movement or the "Z" method, which combines longitudinal and lateral movement
10. Third EMT secure patient to long immobilization device at chest, pelvis, thighs, and below knees, padding as necessary	
11. Second EMT selects and applies an appropriately sized cervical collar, then secures patient's head to long immobilization device, padding as necessary to maintain neutral alignment	
12. First EMT may then release manual stabilization	
13. Reassess and record circulation, movement and sensation in all four extremities	

TEACHING POINTS

G. ORTHOPEDIC STRETCHER (Two Rescuers – Patient Supine)

First EMT

1. Stabilize head and neck in neutral position

Second EMT

1. Assess and record circulation, movement and sensation in all four extremities
2. Select and apply cervical collar
3. Adjust stretcher to height of patient — Stretcher should remain closed when length is adjusted
4. Place one half of stretcher on each side of patient
5. Slide stretcher halves under patient and latch head end together
6. Close foot end of stretcher being careful not to pinch patient — A bystander may be used to gently lift patient to help avoid pinching when closing stretcher halves
7. Secure patient to long immobilization device at chest, pelvis, thighs, and below knees, padding as necessary
8. Secure patient's head to orthopedic stretcher, padding as necessary to maintain neutral alignment
9. First EMT may then release manual stabilization
10. Reassess and record circulation, movement and sensation in all four extremities

H. STRADDLE SLIDE (4 Rescuer minimum)

First EMT

1. Stabilize head, neck and spine in neutral position

Second, Third and Fourth EMTs

1. Assess and record circulation, movement and sensation in all four extremities
2. Select and apply an appropriately sized cervical collar
3. Second and Third EMTs straddle patient facing First EMT
   a. Second EMT bends and places hands under patient's chest below the shoulders
   b. Third EMT bends and places hands under patient's pelvis
4. Fourth EMT positions long spineboard lengthwise at the patient's head or feet
5. At signal from the First EMT, Second and Third EMTs lift patient just enough to allow the long spineboard to pass under the patient's body
6. Fourth EMT slides long spineboard under patient in one smooth, unbroken movement
7. On signal from First EMT, Second and Third EMTs lower patient on the long spineboard
8. If centering of the patient is necessary; on signal from First EMT, slide patient with gentle even motion while maintaining spinal alignment

TEACHING POINTS

9. Third EMT secure patient to long immobilization device at chest, pelvis, thighs, and below knees, padding as necessary
10. Second EMT secures patient's head to long spineboard, padding as necessary to maintain neutral alignment
11. First EMT may then release manual stabilization
12. Reassess and record circulation, movement and sensation in all four extremities

I. COMMERCIAL CERVICAL IMMOBILIZATION DEVICES –
Follow manufacturer's recommendations

J. HELMET REMOVAL

IMPORTANT POINTS:
1. The ability to maintain an airway is of ultimate importance when managing helmeted patients
2. Stabilization and immobilization are the only adequate protection for suspected spinal injuries
3. Consideration should be given to leaving a well fitting helmet, which allows ready access to perform all necessary airway maneuvers, in place
4. Proper immobilization of patients wearing helmets and other protective equipment often requires the patient's body or head to be padded to maintain appropriate neutral position

SKILL:
1. Open faced helmets/half helmets
   a. From the cephalic position, First EMT provides manual stabilization by placing one hand on each side of the helmet with the fingers on the mandible
   b. Second EMT removes the face shield, then and unfastens the restraining strap
   c. Second EMT places one hand on each side of the patient's neck with thumbs resting against the angle of the jaw and the fingers extending behind the occiput to support the patient's head and maintain manual stabilization
   d. First EMT then removes the helmet by grasping the straps or edges of the helmet to spread it as it is gently pulled along the long axis of the body and tilted slightly forward
   e. Throughout the removal process the Second EMT maintains manual stabilization of the patient's head and neck

Glasses, microphones, head-sets or other obstructions must be removed before attempting to remove the helmet

TEACHING POINTS

f. First EMT resumes control of manual stabilization
g. The Second EMT selects and applies an appropriately sized cervical collar in preparation for moving the patient to a long immobilization device
h. EMTs move patient to long immobilization device using appropriate technique as previously described in this section

If the patient is wearing other protective equipment, once the helmet is removed, care must be taken to pad between the occiput and the immobilization device to maintain the head in a neutral alignment

2. Closed face (full face) helmet - (Minimum of three rescuers) Assumes a well fitted helmet and no immediate life-threat due to airway obstruction or respiratory arrest
   a. Patient is positioned on long spineboard using appropriate technique as described previously in this section
   b. While maintaining manual stabilization, the head end of the long immobilization device is elevated approximately three inches from the horizontal and firmly blocked in that position
   c. While the First EMT maintains manual stabilization from the cephalic position, the Second and Third EMTs straddle the patient and the long spineboard
   d. Second EMT grasps the patient under the armpits while Third EMT grasps patient at the pelvis
   e. On signal from the First EMT, the patient is moved up the long spineboard until the lower rim of the helmet is just beyond the top edge of the board
   f. While the Third EMT continues to stabilize the patient's body, the Second EMT places one hand on each side of the patient's neck with thumbs resting against the angle of the jaw and the fingers extending behind the occiput to support the patient's head and maintain manual stabilization
   g. Second EMT assumes manual stabilization of patient's head and cervical spine
   h. When advised by Second EMT that s/he has assumed manual stabilization, First EMT slowly releases manual stabilization
   i. First EMT insures that any objects which could obstruct helmet removal (glasses, microphones, headset, etc) have been removed from the patient and/or helmet, then loosens and unfastens the helmet restraining strap
   j. First EMT then removes the helmet by grasping the straps or edges of the helmet to spread it as it is gently pulled along the long axis of the body and tilted slightly rearward to clear the patient's nose

Second EMT may continue to straddle the patient or may move off to one side when assuming C-spine stabilization

TEACHING POINTS

k. Once the lower edge of the helmet has cleared the patient's nose, the helmet is tilted slightly forward and removed
l. First EMT resumes manual stabilization of the patient's head and cervical spine
m. Second EMT grasps patient under armpits
n. On signal from First EMT, all EMTs slide the patient down the long spineboard until s/he is properly positioned
o. C-collar is applied and patient is secured to long spineboard using appropriate technique as previously described in this section

3. Football Helmet (Patient supine)
   a. First EMT provides manual stabilization by placing one hand on each side of the helmet with the fingers on the mandible
   b. Second EMT removes the face shield by using paramedic shears to cut the nylon straps holding the shield in position
   c. Second EMT then unfastens chin strap(s) at the side snaps, removing it completely
   d. Using the closed paramedic shears as a lever, the Second EMT pries the lower lateral interior pads from the helmet and removes them
   e. If the helmet is equipped with an air bladder, the Second EMT releases the air valve of the helmet and deflates the bladder
   f. Second EMT places one hand on each side of the patient's neck with the thumbs resting against the angle of the jaw and the fingers extending behind the occiput to support the patient's head and maintain neutral alignment
   g. First EMT then removes the helmet by grasping it's edges to spread it as it is gently pulled along the long axis of the body and tilted slightly forward
   h. Throughout the removal process the Second EMT maintains manual stabilization of the patient's head and neck
   i. First EMT resumes control of manual stabilization
   j. Second EMT selects and applies an appropriately sized cervical collar in preparation for moving the patient to a long immobilization device

Depending on the style of helmet being worn, it may be necessary to use a closed face helmet procedure to remove the helmet

Coaching or trainer staff may be able to assist with equipment removal

Shoulder pads may elevate the patient's body to an extent that traditional immobilization devices will no longer provide adequate immobilization

If the patient is wearing other protective equipment, extreme care must be taken to insure spinal alignment is maintained both during the log roll and once the helmet is removed

	TEACHING POINTS
k. EMTs move the patient to a long immobilization device using appropriate technique as previously described in this section l. The Second EMT pads as necessary under the patient's head to maintain neutral alignment m. Patient is secured to long immobilization device using appropriate technique as previously described in this section	Additional care must be taken to pad between the occiput and the immobilization device to maintain the head in a neutral position

Glossary of Common Abbreviations

ABCs ..... **Airway Breathing & Circulation**

AED ..... **Automated External Defibrillator or Defibrillation**

AHA ..... **American Heart Association**

ALS ..... **Advanced Life Support**

ARC ..... **American Red Cross**

ASA ..... **Aspirin**

AVPU ..... **Alert, Verbal, Painful, Unresponsive**

BLS ..... **Basic Life Support**

BP ..... **Blood Pressure**

BSA ..... **Body Surface Area**

BSI ..... **Body Substance Isolation**

BVM ..... **Bag-valve Mask**

CC ..... **Chief Complaint**

cc ..... **Cubic Centimeter**

CO_2 ..... **Carbon Dioxide**

C-spine ..... **Cervical Spine**

CID/HID ..... **Cervical Immobilization Device/Head Immobilization Device**

CMS ..... **Circulation, Movement & Sensation**

CNS ..... **Central Nervous System**

CPR ..... **Cardiopulmonary Resuscitation**

CSF ..... **Cerebral Spinal Fluid**

DCAP/BTLS.....**Deformities, Contusions, Abrasions, Penetrations, Burns, Tenderness, Lacerations, Swelling**

dL.....**Deciliter**

EMS .....**Emergency Medical Services**

EMT.....**Emergency Medical Technician**

ET.....**Endotracheal**

ETC .....**Esophageal Tracheal Combitube**

IM .....**Intramuscular**

IV.....**Intravenous**

IVP .....**Intravenous push**

KED.....**Kendrick Extrication Device**

kg .....**kilogram**

KTD.....**Kendrick Traction Device**

lbs.....**Pounds**

LOC.....**Level of Consciousness**

lpm.....**Liters per Minute**

MAST .....**Medical (or Military) Anti-Shock Trousers**

mg.....**Milligram**

mL.....**Milliliter**

mmHg .....**Millimeters of Mercury**

MOI .....**Mechanism of Injury**

NOI.....**Nature of Illness**

NPO .....**Nothing by Mouth**

NTG.....**Nitroglycerine**

O_2 .....**Oxygen**

OB ..... **Obstetrics**

OPQRST ..... **Onset, Provocation, Quality, Radiation, Severity, Time**

PASG ..... **Pneumatic Anti-Shock Garment**

PO ..... **By mouth**

prn ..... **as needed, as desired, as necessary**

PSI ..... **Pounds per square inch**

pt ..... **patient**

SAMPLE ..... **Signs & Symptoms, Allergies, Medications, Past pertinent medical history, Last oral Intake, Events preceding incident**

SC ..... **Subcutaneous**

SIDS ..... **Sudden Infant Death Syndrome**

SL ..... **Sublingual**

SQ ..... **Subcutaneous**

SOB ..... **Shortness of Breath**

SpO_2 ..... **Saturation percentage of oxygen**

S/S ..... **Signs & Symptoms**

USP ..... **United States Pharmacopia**

VS ..... **Vital Signs**

> ..... **Greater than**

< ..... **Less than**